(IDG)

STALLED IN TRAFFIC
Urban delivery service Kozmo.com has cooled off considerably, but company execs remain optimistic. Page 42

THE RACE IS ON
Employers compete to snatch up talent as top techies ditch dot-coms. Page 36

DISAPPEARING E-MAIL
For the security-conscious, new e-mail software destroys messages after an expiration date. Page 50

COMPUTERWORLD

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JANUARY 1, 2001 • VOL. 35 • NO 1 • $5 COPY

LICENSING SHOWDOWN LOOMING

As sides gird for battle in key states, users say UCITA law would increase IT costs

BY PATRICK THIBODEAU

UCITA proponents will push for adoption of the controversial software licensing law in four or five states in 2001, but they will face opposition from some end-user companies, along with warnings that the measure could significantly increase IT costs.

Nationwide Insurance Cos. estimated that the Uniform Computer Information Transactions Act could boost its costs by a minimum of $20 million. The insurer cited security problems created by the law, which would give software vendors the ability to remotely

disable systems through "self-help," as it's called in UCITA, as well as increased contracting and negotiation costs.

Moreover, UCITA's liability-limiting provisions would increase Nationwide's software quality assurance costs because the measure would act as a deterrent for vendors to deliver a working product, said Bruce Barnes, vice president of technology strategy and planning at Columbus, Ohio-based Nationwide.

"The best that we can do is to make people aware of the implications associated with

MARYANN GOEBEL, CIO at General Motors Europe: "Going global" means negotiating with organized labor.

IT AGENDA

Will you stumble from project to project this year, or will you have a coherent plan for accomplishing IT goals? Computerworld offers 10 action items to help you focus on what's really important, from snagging the best talent to retooling your data center. You'll get advice from your peers on how to manage Web content, migrate to Windows 2000, analyze clickstream data and even get a return on investment from that wireless project you've been thinking about. *Special Report begins after page 34.*

SUPPLY-CHAIN ROI IS ELUSIVE

Report: Gaffes made stock prices fall 8.6%

BY MARC L. SONGINI

Fruit of the Loom Inc. thinks it can buck a trend identified in a recent study on supply chain right.

The Chicago-based clothing

giant is launching a manufacturing data collection pilot program as the start of a supply-chain overhaul, said Brent Sealey, a senior planning manager at the company. If successful, the pilot will be the first step in a widespread effort to replace homegrown supply-chain and enterprise resource planning applications with commercial software, said Sealey. Ultimately, this should enable the company to reduce

NOT-SO-HAPPY HOLIDAYS ONLINE

Hint for pure plays: It's the economics, stupid

BY DAN VERTON

A lot of pure-play online retailers are learning the hard way that while cool Web sites attract a lot of eyeballs, e-retailing is still about one thing: making money.

Lower-than-expected sales forecasts at the height of the holiday buying season raised concerns last month about the future of Los Angeles-based eToys Inc. [see story, page 16] and sent shivers down the spines of other venerable Internet retailers in cyberspace, including Seattle-based Amazon.com Inc.

The problem remains that

the vast majority of troubled pure-play e-retailers continue to spend an inordinate amount of money trying to attract new customers to their Web sites and marketing their brands, said Paul Ritter, an analyst at The Yankee Group in Boston.

The result has been unsustainable gross margins that investors are shying away from. But the problems at eToys

A Brand New
Day For CA.

A New Mission: The Software That Manages eBusiness.

We started with four people, one product, and no venture capital. Twenty-four years later, CA has been involved in virtually every aspect of the software industry. From mainframes to PCs to Palm Pilots, from database to financials to network management, we've developed and sold more kinds of software for more kinds of computers than any other company.

But today, our mission is more focused than ever before. Today, we develop and support only one kind of software: *The software that manages eBusiness.*

That may sound simple enough, but it's the biggest opportunity we've ever faced. You see every business in the world is going to need help managing their eBusiness. And we are uniquely positioned to help in more ways than anyone else.

We offer not only the broadest range of eBusiness software solutions, we have more eBusiness software developers, consultants, and experts. And with a 24-year track record of success and a client list that includes 99% of the Global 2000, we're years ahead of the competition and we have the experience, resources, and reputation. No matter which way you look at it, it's very clear that our new mission is ideally suited to our talents, our capabilities, and our heritage. It's not only the right strategy for our company, it's also the best path to maximize shareholder value.

A New Business Model.

The new economy demands a new business model. Clients demand a new kind of partner that understands their business problems and one that will do whatever it takes to solve them. That's why we are transforming our entire company into a more flexible, responsive, and customer-focused organization. We're the first enterprise software company to receive global ISO 9002 certification for our commitment to quality. To top all of this off, we even introduced a revolutionary new business model that gives our clients more choices on how to partner with us. You see, when our clients speak, we not only listen — we act.

A New Logo.

After 24 years, we're not the same company we used to be which is why we hired the world's leading corporate identity company to develop a new corporate logo that would more accurately portray what CA is all about. We think they got it just right. Our new logo tells the world that CA is focused, focused, focused. It builds on a glorious quarter century of history and corporate culture. It's a colorful, fresh new look that offers the dynamic combination of high energy and vision with good old fashioned, feet-on-the-ground stability and strength. Our new logo shows that we are very proud of our distinguished 24-year heritage and track record of success but at the same time we have our eyes fixed firmly on the future. We'll be introducing our new logo to more than 1 billion people in 160 countries over the next 120 days.

A New Attitude.

You can see it in our faces. You can hear it in our voices. You can feel it when you shake hands with any one of our 18,000 employees. Our people have never been more excited, more motivated and more energized about all of the changes happening here at CA. Our people have never been more focused, more responsive, and more committed to helping our clients solve their problems. It's a new attitude and energy that is as refreshing and as powerful the new logo that represents it.

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LEARNING BY LAPTOP

Pssst! Looking for a small college that's hip to technology? Try Valley City State University in North Dakota, whose strategic use of IT has helped transform it into an educational pioneer. "We needed to differentiate ourselves big time," says school President Ellen Chaffee. Page 40

IT AGENDA 2001

Need to set your priorities for the new year? IT Agenda 2001 not only identifies what you need to do, but also offers advice on how to do it. Our action items range from plumbing your click-stream data to migrating to Win 2k. Your to-do list follows page 34.

COMPUTERWORLD THIS WEEK

JANUARY 1, 2001

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AT DEADLINE

Xerox Loses Y2k Insurance Suit

Xerox Corp. in Stamford, Conn., has lost a summary judgment against its insurer, American Guarantee and Liability Insurance Co., in a New York state court. Xerox attempted to recoup the $183 million it spent fixing year 2000 date problems. Under New York law, an insurance customer must notify its insurers of potential losses within 90 days. Xerox began its Y2k work in 1996 but didn't file a claim with American Guarantee until March 1999. Xerox is considering an appeal, according to company officials.

Hacker Cracks Egghead's Security

Online technology retailer Egghead.com Inc. confirmed that a hacker managed to penetrate its computer systems, possibly including the customer database to which the company stores credit-card numbers and other personal information about the users of its Web site. In a statement late last month, Menlo Park, Calif.-based Egghead said it had reported the hacking incident to credit-card companies "as a precautionary measure," in case card numbers were stolen by the intruder.

Short Takes

IBM settled 8-year-old allegations of concealing bribes paid by former top executives at its IBM ARGENTINA SA subsidiary, in violation of the U.S. Foreign Corrupt Practices Act. IBM will pay a $300,000 penalty. . . . CALDERA SYSTEMS INC. in Orem, Utah, has announced a project to develop an open-source Samba client library to make it easier for developers to integrate Linux and MICROSOFT CORP. applications. . . . LUCENT TECHNOLOGIES INC. in Murray Hill, N.J., warned that it expects to report a "significant" loss for the current quarter and said its revenue total for the previous three-month period is being reduced by $679 million. . . . Madrid-based AMADEUS GLOBAL TRAVEL DISTRIBUTION SA signed a 10-year, $157 million deal to operate the reservations, inventory and departure control systems for Australia-based QANTAS AIRWAYS LTD.

Y2k Quick Fixes Spark New Round of Upgrades

Costly, patched-up older systems now being replaced with Web-based apps

BY LEE COPELAND

FOR THE NATIONAL City Corp. (NCC), a bank with more than 1,500 corporate and retail chains, data conversion concerns didn't go away with year 2000.

The Cleveland-based bank retrofitted a central application with Y2k-compatible dating a year ago. But that process introduced complications into already-unwieldy applications.

It's a problem many IT shops faced in 2000: Applications that once hummed along effortlessly were crippled by the date fixes undertaken to keep them in production.

Date Modifications Woes

NCC spent $10 million six years ago to custom-build a customer support application, a vital tool for tracking credit and transaction histories and contacts of its corporate accounts. But with the century date-change issue not yet on the horizon, the developers failed to make the three-tiered application Y2k-compliant.

"We discovered that the retail difficulty would occur after the clock ticked over [to 2000]," said Jim Hughes, CEO at the $92 billion-in-assets bank. "There were issues with the way the system was developed, which made it difficult to modify the software while it was in production. And we were using old versions of the tools that had not been kept up-to-date."

Phillip Murphy, an analyst at Giga Information Group Inc. in Cambridge, Mass., said numerous companies sought to overhaul key applications after getting over the Y2k hurdle.

"A lot of folks ran out of time to do it right and put a bludge in," said Murphy. "Other companies have made their code more difficult to use and problematic in the way they patched it."

To get out of its three-tiered quagmire, NCC used conversion software from Relativity Technology Inc. in Cary, N.C., to transform the application into a Web-enabled and browser-based architecture. It cost NCC about $3 million and took nine months to revamp the application, Hughes said, but he estimated that it would have cost twice that to rewrite the application from scratch.

"The Y2k push highlighted how complicated the legacy world is," said Tyler McDaniel,

an analyst at Hurwitz Group Inc. in Framingham, Mass. "There was a desire for the quick fix to maintain applications. The Y2k push is done, so budgets are swinging back and moving toward Web-enabled commerce."

More Uses Web-Based Apps

Some companies faced a different post-Y2k irony: having to scrap predatorial applications they had spent time and cash to fix.

Scott Davis, a database administrator at Pabst Brewing Co. in San Antonio, is in the midst of converting a mammoth, 8-year-old database to the Web. Y2k salvage work

kept the legacy application — which contains hundreds of tables on Pabst's promotions, pricing, credit and tax formulas — in production. Yet after the conversion is completed, Pabst plans to scrap the DOS-based database.

"The beer business is tough," said Davis. "The 50 states have 50 different requirements." Using software from Austin, Texas-based Data Junction Corp., Davis said he hopes to widen access to the system and make it easier to manage by converting the database into a Web-enabled system that supports Windows clients and a SQL Server 7 back end. ▶

Labor Department Unveils Revised H-1B Regulations

Equal treatment sought for workers

BY JULEKHA DASH

The U.S. Department of Labor late last month offered expanded regulations that apply to the employment of skilled temporary foreign workers, or H-1B visa holders.

The new guidelines, which attorneys and labor leaders generally applauded, are geared toward requiring companies to provide equal treatment to U.S. and H-1B workers, as well as safeguarding against abuse of the visa program.

However, one group expressed concern that the rules, which take effect the day before President Clinton leaves office, might actually lead employers to treat H-1B holders more favorably than U.S. workers because provision stipulates that employers pay H-1B workers even during periods of downtime.

For example, if a company decided to lay off workers for a couple of weeks before a

restructuring, U.S. citizens wouldn't get paid during that period, said Lynn Shotwell, director of government relations at the American Council on International Personnel Inc.

Yet this provision implies that H-1B holders would receive payment during that period, said Shotwell. "This is one of the issues they didn't resolve to our satisfaction," she said.

Under the new regulations, employers who offer the same benefits to H-1B and U.S. employees. Also, firms whose workforces consist of at least

15% H-1B holders — typically contractors — or are proven to have violated H-1B regulations in the past must attest that they aren't replacing U.S. workers with H-1B workers. Shotwell estimated that this would apply to a few hundred firms.

H-1B holders are also granted "whistle-blower protection," allowing them to stay in the U.S. for the duration of their visa if they report visa abuses by their employers.

"One of the problems with the temporary foreign worker program is that [H-1B] workers are extremely dependent on employers to get them into the U.S. and sponsor them for a green card," said John Fraser, deputy administrator for the wage and hour division at the Labor Department.

"There are already a lot of reasons why temporary foreign workers won't complain" about treatment, said Fraser, adding that whistle-blower protection removes some obstacles for foreign workers who fear that reporting abuses will result in their deportation.

Last October, Congress increased the H-1B visa quota to 195,000 during the next three fiscal years. The cap was due to fall to 107,500 for the fiscal year that began Oct. 1, 2000, and to 65,000 the following fiscal year. ▶

AT A GLANCE

Revised Labor Requirements

The new H-1B regulations:

Require companies whose workforce is at least 15% H-1B visa holders to confirm that they aren't replacing U.S. workers

Force firms to offer same benefits to H-1B holders and payment during downtime

Provide "whistle-blower protection" to H-1B holders who tacitly against their employers

SOURCE: U.S. DEPARTMENT OF LABOR

NEWS

National Security Threatened by Internet, Studies Say

Experts warn that terrorists, other nations are busy preparing for cyberwarfare

BY DAN VERTON

During the next 15 years, the U.S. will face a new breed of Internet-enabled terrorists, criminals and nation-state adversaries that will launch attacks not with planes and tanks, but with computer viruses and logic bombs, according to two reports released this month.

Although the 68-page report by the CIA's National Intelligence Council (NIC) mentioned critical electronic infrastructure protection and information warfare only briefly, it warned Americans that adversaries around the world are hard at work developing tools to bring down the U.S.'s private sector infrastructure.

Many countries already have programs to develop such technologies and "could develop such capabilities over the next decade and beyond," according to the NIC study.

A report by the Washington-based Center for Strategic and International Studies (CSIS) went even further, warning of a future cyberarms race and the rise of terrorist groups supported by "computer-literate youngsters" bent on disrupting the Internet.

"The U.S., Russia, China, France and Israel are developing cyberarsenals and the means to wage all-out cyberwarfare," the CSIS study said.

China is of particular concern, said experts, because it's devising strategies for unrestricted electronic warfare. Officials said critical infrastructures in the U.S. could be targeted in the future as revenge for incidents like the 1999 accidental bombing of the Chinese embassy in Serbia.

"They suggest having every person in China send one

e-mail to an [an address] of Internet at the U.S. or use hacker tools easily available on the Internet to support a mass [denial-of-service] attack," said John Shinder, a former military intelligence officer.

Online extortion and falsification of shipping manifests by criminals, and attempts by

> • Many countries have programs to develop cyberattack technologies and could develop such capabilities over the next decade and beyond
>
> • The U.S., Russia, China, France and Israel are developing **cyberarsenals** and the means to wage all-out cyberwarfare.
>
> • Terrorist groups are developing **weapons** of mass disruption.
>
> • Russia has become a **breeding ground** for hackers. The Russian equivalent of the U.S. National Security Agency and organized crime groups recruit the best talent.
>
> • Electronic stock scams, robberies and **extortions** are proliferating.

countries to use hacking techniques to evade trade sanctions are a rising concern, said Jeffrey Hunker, senior director for critical infrastructure protection at the White House.

Hunker said officials are also becoming increasingly concerned with the proliferation of "always-on" Internet applications, such as modems and network printers. Hackers are finding ways to penetrate these devices and possibly use them as launching pads for more devastating distributed denial-of-service attacks, he said.

Last year, a hacker checked into a printer at the Navy's Space and Naval Warfare Center and rerouted a potentially sensitive document to a server in Russia.

Stephen Northcut, director of the Global Incident Analysis Center at the SANS Institute in Bethesda, Md., said that in one day recently, his cable modem-equipped laptop received 54 probes, two of which penetrated his personal firewall. "Our systems come to us hackable," said Northcut. "It's a feature."

Winn Schwartau, founder of security consultancy Interpact Inc. in Seminole, Fla., said the real threat comes from the desire of the U.S. infrastructure and the people who run it.

"We built these systems and our business models on the assumption that things will always work," said Schwartau. If a major attack is made on the infrastructure, "it's going to happen from the inside," he said.

Tim Atkin, a member of the National Partnership for Critical Infrastructure Security and director of critical infrastructure protection at consulting firm SRA International Inc. in Fairfax, Va., said the reports hold a "powerful message" for the national cybersecurity effort. He added, however, that future preparedness will be determined by how much emphasis companies and the government place on fixing known vulnerabilities, training and education and enforcing good security polices.

Dan Morrison, a partner in the risk consulting group at Arthur Andersen LLP in Ottawa, said although the threat of terrorists groups attacking the infrastructure is real, a word of caution is needed. "It's scary, but it's really hard to bring down the Internet." ◆

Helping Microsoft Not an Easy Undertaking

Government's case could get stronger

BY PATRICK THIBODEAU

Despite Microsoft Corp.'s recent warning of bad financial times ahead, the company's market share in PC operating systems and servers may be expanding, according to new research data from IDC.

The data may be used by the U.S. government to underscore its point that Microsoft — despite whatever financial problems it may faces — continues to be a monopoly, said legal experts.

"Microsoft is not losing ground," said Dan Kusnetzky, an analyst at IDC in Framingham, Mass.

Microsoft recently warned that profits wouldn't meet expectations for the year-old quarter because of an economic slowdown. But market data due to be released later this month will show a slight increase in the company's 87% market share in operating systems, reported in 2000, as well as an increase over its 38% of the server market, said Kusnet-

zky. He credited the success of Microsoft applications for the increase.

The fallout in PC sales "may reduce the value of Microsoft's monopoly but not the monopoly itself," said Stephen D. Houck, former lead trial counsel for the 19 states involved in the case against Microsoft and now an attorney at Reboul, MacMurray, Hewitt, Maynard & Kristol in New York.

The government late next week is scheduled to file its brief asking the U.S. District Court of Appeals not to overturn trial Judge Thomas Penfield Jackson's ruling last year that the company broke antitrust laws. The ruling called for a breakup of the company, separating its operating systems business from its other lines of business.

Microsoft disputes the government's claim that it is a monopoly and says Windows is being challenged by a variety of operating systems, such as thin clients and Internet appliances. In its brief to the appeals court in November, the company also denied any wrongdoing.

A potential wild card for this

case is the impact of the incoming Bush administration. Through appointments at the U.S. Department of Justice (DOJ), particularly in its antitrust division, the new administration could ease the hard-line tactics against the company and be more open to settlement, say legal experts. But some end users hope that doesn't become the case.
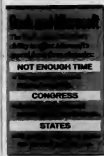
Tim Fake, IT director at Lancaster Newspapers Inc. in Lancaster, Pa., said he doesn't believe Microsoft has done much wrong and that he is supportive of the company. But the Bush administration "should let the legal system run its course. I'm not sure it's that important, where the president may be involved," he said.

Ron Wells, information systems director at Carolina Turkeys Inc. in Mount Olive, N.C., said he doubts that the new administration will intervene. "I just think they have bigger priorities," he said.

In any event, it won't be easy for the Bush administration to influence this case. First, the pace of the appeals case is moving faster than any new DOJ appointments. Second, the

Bush DOJ appointments have to be confirmed, and that would mean testifying before Senate Judiciary Committee Chairman Orrin Hatch (R-Utah), who has expressed repeated concern about Microsoft's practices. Third, the case also involves 19 states that may continue to pursue it, no matter what the White House does.

Helping out Microsoft at this point may carry with it "a heavy political cost," said William Kovacic, a law professor at George Washington University in Washington. He said he believes George W. Bush's best course would be to "stand behind the principal of the rule of law" and let the appeals process proceed. ◆

NOT ENOUGH TIME
CONGRESS
STATES

Digital Angel to Watch Over Patients

But some fear system could be Big Brother

BY BOB BREWIN

GUARDIAN ANGEL? have gone digital. And they have to have privacy and pri-vacy.

Applied Digital Solutions Inc. has developed a wearable system called Digital Angel that features medical sensors, a Global Positioning System (GPS) location chip and a wireless transmitter that can summon medical assistance for people who might other-wise be unable to obtain it.

According to the Palm Beach, Fla.-based company, Digital Angel will also help adult assisted-care facilities lo-cate Alzheimer's disease pa-tients, who tend to wander, in addition to helping parents monitor the location of their autistic children. Applied Digi-tal also plans to use its technol-ogy to help people find lost pets. Its first product is due for introduction next month.

Craig Mathias, an analyst at Farpoint Group in Ashland, Mass., called the use of loca-tion technologies for patient care a "hot topic" with a num-ber of companies angling to get into the market. Pinpoint Corp. in Billerica, Mass., has already installed its systems — which use a network of indoor anten-nae to track radio tags worn by patients — at a California Clini-cal Trials, an adult care facility in Beverly Hills, Calif.

Privacy fears

Mathias said that while pa-tient location technology has attracted developers, it raises serious privacy concerns. David Sobel, a lawyer at the Washington-based Electronic Privacy Information Center, said he has a "lot of discomfort with devices that track peo-ple's whereabouts."

Location technology is "the hot new privacy issue," Sobel said. "It raises already have pa-tients' bills or rights [for nurs-ing homes or assisted-care fa-cilities], maybe there has to be

a 21st-century revision that covers location information."

Richard Smith, a privacy pol-icy expert at the Privacy Foun-dation in Denver, said that al-though he considers the ability to find an Alzheimer's patient an "acceptable" use, he also con-cerned about potential abuses.

For example, Smith said, a suspicious husband could take a pet's device to follow the movements of his spouse. "Someone could buy a pet tracker, throw it in their spouse's car and find out where

they have been," he said.

Peter Zhou, president of Ap-plied Digital Solutions' Digital Angel unit Inc. subsidiary, em-phasized that Digital Angel is a location determination system rather than a tracking device.

"It does not have enough battery power to constantly monitor people," Zhou said, explaining that Digital Angel transmits location information only intermittently.

"If someone is to have a heart attack, privacy is not the issue, safety of his is their main concern," Smith said. The loca-tion information derived from the Digital Angel GPS chip — which performs triangulation

on a fleet of 24 satellites and pinpoints a location to within 75 meters — will allow medical personnel to quickly arrive at an emergency scene and start providing assistance.

Keith Bolton, Applied Digi-tal's chief technology officer, said the biosensor and location information from Digital An-gel is fed into middleware that then pinpoints the ship wearer on a map displayed on a secure Web page.

Zhou said Digital Angel next month will introduce a pager-per tracker, with smaller wristwatch-size devices to come that incorporate biosen-sors for use with humans.

Zhou dismissed concerns about the possibility of a re-pressive government using such devices to track the mass-es. "An inverter is not respon-sible for evil uses of his prod-uct," he said. "No one blames the atom bomb on Einstein."

Guardian Angel

How Digital Angel works:

- A patient wears a micro-chip that contains biosen-sors, a GPS receiver and a wireless transmitter.
- The device monitors the health and location of the patient and periodically trans-mits information to a central monitoring station.
- When the biosensors indicate an event that re-quires medical assistance, the control center dispatches personnel to the scene, which is located by a GPS receiver.
- In location mode, the sys-tem will help the control station monitor the location of Alzheimer's patients, who tend to wander out of assist-ed-care facilities, allowing quick intervention by facili-ty personnel.

Expanded Privacy Rules Perpetuate Debate

Eleventh-hour rules spur health industry, advocate sparring

BY JULEKHA DASH

President Clinton's last-min-ute introduction of sweeping federal rules to protect patient privacy has sparked a new round of debate in the health care industry, which has been awaiting the privacy regula-tions for the past five years.

While health privacy advo-cates said they favor the rules, which Clinton announced Dec. 20, critics said the unex-pected move by the adminis-tration to apply health privacy protection to oral and written communications will add an necessary complexity to an in-dustry that's already heavily regulated. The original pro-posal applied only to electron-ic records.

"Does the government have the right to regulate every sin-gle letter that a doctor writes about a patient?" said Mark An-derson, a vice president at Meta Group Inc. in Stamford, Conn., and a former hospital CIO.

But Zoe Hudson, a senior policy analyst at the Health Privacy Project at Georgetown

University in Washington, said the regulations are necessary to protect patient privacy.

"Until now, there has been no federal law that protects pa-tient privacy," she said. "In practice, [health records] re-ceive less protection than fi-nancial records or even video rental records."

Times said president-elect George W. Bush could make additional changes to the Health Insurance Portability and Accountability Act of 1996 (HIPAA) after he takes office on Jan. 20. Bush's critics didn't immediately return phone calls seeking comment.

Under the rules, health care organizations would need to have patients sign a one-time

consent agreement allowing their health data to be shared for billing and treatment pur-poses. Patients must also be given detailed written infor-mation about their privacy rights and be informed of any planned use of their personal information. Failure to comply with the regulations could re-sult in civil fines or criminal charges against those who sell health information.

The regulations, which were prepared by the U.S. Depart-ment of Health and Human Services, are the final version of proposed rules that were is-sued a year ago, after Congress failed to pass comprehensive medical privacy legislation as required by the HIPAA.

New Health Data Requirements

The new patient privacy rules introduced by the Clinton admin-istration last month apply to written, oral and electronic communi-cations. They state the following:

- Health care providers are prohibited from releasing most information about individual patients without getting their consent in advance.
- Patients are granted the right to see a copy of their records and be notified of how providers plan to use their information.
- Civil fines of $100 per violation can be imposed upon providers, up to a total of $25,000 per year, and criminal penalties of as much as $250,000 and 10 years in prison can be levied against individuals selling health information.

Applying the medical priva-cy rules to paper and oral com-munications shouldn't have much impact on IT workers, said Scott Lebida, executive director of information ser-vices at MemorialCare in Long Beach, Calif.

According to the American Hospital Association in Chica-go, the privacy rules will cost hospitals as much as $22.5 bil-lion over five years. The Clinton administration, however, has es-timated that the HIPAA will cost the entire health care in-dustry $17.6 billion over 10 years.

The act also rolls on hospi-tals, health insurers and health care clearinghouses to estab-lish procedures for protecting patient privacy, such as ap-pointing executives to oversee their internal procedures. And companies are prohibited from accessing health records for employment purposes.

Claudine Singer, a senior an-alyst at New York-based Jupiter Media Metrix Inc., said that while the HIPAA will have an enormous impact on the health care industry in the long run, it will be some time before changes occur. Most health care organizations will have two years to comply with the fi-nal rules, and smaller health care groups and community hospitals have three years.

"Don't expect enormous change tomorrow in your doc-tor's office," Singer said. ▶

Digital Angel to Watch Over Patients

But some fear system could be Big Brother

BY BOB BREWIN

GUARDIAN ANGELS have gone digital. And they have to worry about privacy.

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on a fleet of 24 satellites and pinpoints a location to within 10 meters — will allow medical personnel to quickly arrive at an emergency scene and start providing assistance.

Keith Bolton, Applied Digital's chief technology officer, said the biosensor and location information from Digital Angel is fed into middleware that then pinpoints the chip wearer on a map displayed on a secure Web page.

Zhou said Digital Angel next month will introduce a paper-size pet tracker, with smaller wristwatch-size devices to come that incorporate biosensors for use with humans.

Zhou dismissed concerns about the possibility of a repressive government using such devices to track the masses. "An inventor is not responsible for evil uses of his products," he said. "No one blames the atom bomb on Einstein." ◗

Expanded Privacy Rules Perpetuate Debate

Eleventh-hour rules spur health industry, advocate sparring

BY JULEKHA DASH

President Clinton's last-minute introduction of sweeping federal rules to protect patient privacy has sparked a new round of debate in the health care industry, which has been awaiting the privacy regulations for the past five years.

While health privacy advocates said they favor the rules, which Clinton announced Dec. 20, critics said the unwarranted complexity to an industry that's already heavily regulated. The original proposal applied only to electronic records.

"Does the government have the right to regulate every single letter that a doctor writes about a patient?" said Mark Anderson, a vice president at Meta Group Inc. in Stamford, Conn., and a former hospital CIO.

But Zoe Hudson, a senior policy analyst at the Health Privacy Project at Georgetown

University in Washington, said the regulations are necessary to protect patient privacy.

"Until now, there has been no federal law that protects patient privacy," she said. "In practice, [health records] receive less protection than financial records or, even video rental records."

Critics said president-elect George W. Bush could make additional changes to the Health Insurance Portability and Accountability Act of 1996 (HIPAA) after he takes office on Jan. 20. Bush's office didn't immediately return phone calls seeking comment.

Under the rules, health care organizations would need to have patients sign a one-time

consent agreement allowing their health data to be shared for billing and treatment purposes. Patients must also be given detailed written information about their privacy rights and be informed of any planned use of their personal information. Failure to comply with the regulations could result in civil fines or criminal charges against those who sell health information.

The regulations, which were prepared by the U.S. Department of Health and Human Services, are the final version of proposed rules that were issued a year ago, after Congress failed to pass comprehensive medical privacy legislation as required by HIPAA.

Applying the medical privacy rules to paper and oral communications shouldn't have much impact on IT workers, said Scott Cebula, executive director of information services at MemorialCare in Long Beach, Calif.

According to the American Hospital Association in Chicago, the privacy rules will cost hospitals as much as $22.5 billion over five years. The Clinton administration, however, has estimated that the HIPAA will cost the entire health care industry $17.6 billion over 10 years.

The act also calls on hospitals, health insurers and health care clearinghouses to establish procedures for processing patient privacy, such as appointing executives to oversee their internal procedures. And companies are prohibited from accessing health records for employment purposes.

Claudine Singer, a senior analyst at New York-based Jupiter Media Metrix Inc., said that while the HIPAA will have an enormous impact on the health care industry in the long run, it will be some time before changes occur. Most health care organizations will have two years to comply with the final rules, and smaller health care groups and community hospitals have three years.

"Don't expect enormous change tomorrow in your doctor's office," Singer said. ◗

Is your network helping you overcome limits?
Or is it becoming one?

BRIEFS

Microsoft to Buy Great Plains Software

Microsoft Corp. said it will buy Fargo, N.D.-based business software developer Great Plains Software Inc. in a $1.1 billion stock-swap deal that propels Microsoft into the corporate applications market – potentially putting it in competition with other vendors that export its operating systems and SQL Server database. Great Plains will continue to develop, market and support its current line of business management software, Microsoft said.

Oracle Extends $1M Bet for Speedy Sites

Oracle Corp. said it's extending its Web site performance guarantee to all customers of San Jose-based e-business software vendor BEA Systems Inc. Oracle CEO Larry Ellison originally made the guarantee in October during the annual Oracle OpenWorld conference, where he pledged $1 million to any company whose Web site doesn't run at least three times faster using the Oracle9i Application Server than it does using Microsoft Corp.'s SQL Server or IBM's DB2.

Filtering-Software Law OK'd By Congress

As part of its final budget agreement, Congress last month approved legislation that will require the use of filtering software at schools and public libraries. The Children's Internet Protection Act requires software that will block material considered "harmful to minors." But the American Civil Liberties Union said the use of this software in libraries is censorship and that it plans to mount a legal challenge.

Yahoo Seeks U.S. Help

Yahoo Inc. on Dec. 21 asked the U.S. District Court in San Jose to enter a ruling declaring that the French government has no jurisdiction over the company. The filing was prompted by an order issued in November by a French court demanding that Yahoo prohibit the sale of Nazi artifacts from its online auction site to users in that country.

Microsoft Tweaks Windows Certification

Changes stir discussion, but IT managers see need for new exam

BY CAROL SLIWA

AT YEAR'S END, Microsoft Corp. contended the deadline for IT professionals who wish to take its Windows NT 4.0 certification exam and created a new NT test that can be used as an elective toward the Windows 2000 certification.

But the fact remains that Microsoft Certified Systems Engineer (MCSE) credentials based on the existing NT 4.0 exam will expire at the end of 2001, and anyone who wants MCSE status must upgrade to the Windows 2000 track to retain certification.

Keeping Up Is Key

Those changes have upset some IT professionals [News, May 22] and stirred controversy in an online community forum on Computerworld's Web site (www.computerworld.com).

But several IT managers who make buying and training decisions said they understand Microsoft's position and expect certified professionals to be up to speed on a company's latest technology.

"That's their new product. Why wouldn't they" encourage IT professionals to get certified on Windows 2000? asked Wayne Richards, a senior technical support analyst at The Goodyear Tire & Rubber Co. in Akron, Ohio.

"I already have three [people] certified [for Windows 2000]. It's all about being ahead of the game. I think Microsoft is correct in giving businesses a little push. They're just raising the bar and saying, 'Let's get going,'" said Susan McKay, vice president of customer and information systems at Aircast Inc. in Summit, N.J.

"How long do we expect an operating system to last these days? Every software company has got to decide how long to carry support and how long to keep back issues going," said Bob Dutile, a senior vice president in IT at KeyCorp in Cleveland. "I don't see Microsoft as being that different than anyone else out there."

Experience Still Counts

Dutile said he recognizes the value of certifications and invests in approving employees who seek them. "We understand certification at the end of the day means you passed a test. It doesn't tell you everything. Experience is an additional factor," he said.

One CIO at a national retailer said, "These days, you almost question why a network engineer with three to five years' experience doesn't have that certification. It wouldn't be a deal killer. But we definitely look at it, and it gives an

edge [to a candidate]."

Yet, cognizant that many companies still may be running NT networks, the CIO also was sympathetic to the plight of NT-certified engineers. "That's kind of crummy [of Microsoft] to say you're no longer certified if you're running an NT 4.0 shop. Anybody in that position is working a lot of hours in tough jobs. It would be a difficult situation for them" to work in the time to get the Windows 2000 certification, he said.

The deadline to take Microsoft's Windows NT 4.0 certification exam originally was Dec. 31. But the company extended the availability of the exams until Feb. 28 to accommodate candidates who had trouble scheduling tests.

Microsoft also is creating a new certification exam to test skills needed to maintain a Windows NT Server 4.0 network. The exam also tests skills required to perform incremental upgrades to Windows 2000 servers.

Passing the new NT 4.0 exam, which is due in beta form in the second quarter, earns the recipient the Microsoft Certified Professional credential. But the new NT 4.0

Microsoft Explains Program's Effect on Systems Pros

Changes to the Microsoft certification program, introduced with the rollout of Windows 2000, have stirred up controversy among some IT professionals. Core story above and Computerworld's Windows 2000 Community at http://www.computerworld.com/windows/2000/136.42know/Forum3HTML/000148.html.

Computerworld technology executives editor Robert Mitchell last month spoke with Anne Marie McSweeney, Microsoft's acting director of certification skills and assessment, about these changes and how they'll affect IT professionals and their managers.

Q: Some applying MCSEs say they can't finish their MCSE NT 4.0 track in time to make the deadline. NT 4.0 MCSE candidates are also rushing to complete at least three NT 4.0 core exams so they can qualify for the accelerated exam. Do you feel that extending the deadline to Feb. 28 addresses those concerns adequately?

A: I believe that it does. We believe that it addresses a good portion of those people because it gives you two more months. Even people who had two exams to go were really planning on finishing. So we think the two months' extra time will alleviate some of that.

Q: With the introduction of Windows NT 4.0, many previous core requirements and electives still counted toward the MCSE. With Windows 2000, was this not the case. Couldn't this change have been more gradual?

A: Our biggest driving factor in all of this is, how can we make this credential relevant in the industry? [That's] because the credential is only as valuable as hiring managers see it. And at this time, hiring managers see value in keeping up-to-date with technology. As well, we looked at a lot of forecasts as to when people were going to implement Windows 2000. So it's those things that [moved] us in this direction. We considered

[a parallel NT 4.0 track], and one of the things our customers are telling us is, keep it simple.

Q: Some MCSEs have been reluctant to move to the Windows 2000 track. They say they don't want to find themselves in the situation where they have to retrain most of the exams again in another year or two. How do you respond?

A: The MCP [Microsoft Certified Professional] program is going to try to keep pace with the industry. If the industry slows down, we'll slow down, too. It's unlikely that the industry or us would make people update the technology in one year. When we announced this change, people really had 18 months. So there's been a pretty long time span on NT 4.0.

Some people are a little bit worried about Whistler, and I think that might be driving some of that uncertainty. The two tracks will run in parallel, so that people who have taken the Windows 2000

exams will not have to take the Whistler exams in order to keep their certifications up-to-date.

Q: Some IT managers have complained that with the MCSE program changes announced in 2000, Microsoft was trying to force them into migrating to Windows 2000.

A: I have heard that from individuals. I have not heard that from managers. We response to Windows 2000 has been overwhelmingly positive. We don't want certification to force their hand. We anticipate that they will move to Windows 2000 . . . for business reasons.

Q: Microsoft estimates there are 350,000 MCSEs and they today expect the changes in the current program will halve that number. How do these changes benefit the hiring managers?

A: Remember that there's the MCP credential. We don't expect that [drop] on the MCP side. If you take just one Win 2000 exam, you are an MCP, so that will help hiring managers [find] someone who can install Win 2000 Professional. ▶

NEWS

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IT professionals who have passed all three of the old Windows NT 4.0 exams qualify to take Microsoft's accelerated exam for the MCSE credential in Windows 2000.

The MCSE designation in Windows 2000 normally requires four core exams, a design elective and two other electives. Passing the accelerated exam, which can be taken once free of charge, meets the requirement for four core exams. The accelerated exam will be offered until the end of next year.

Comes with the Territory

"IT professionals know that learning and retesting are just a part of the industry," said Michael Adams, a network administrator at DuPont Beaumont Federal Credit Union in Nederland, Texas. Adams has the MCSE certification.

"We will always be forced to keep up with technology, even if that means retesting in a new [network operating system]," Adams said. "The new exam, the extension of the testing deadline and the looming expiration of the MCSE NT 4.0 track are all just background noise in the busy IT world."

End of Volume Discounts Shuts Door on 'Consumer' Windows

Changes could affect some corporate users, but many say plan won't be a problem

BY CAROL SLIWA

Microsoft Corp. announced late last month that it will discontinue volume licensing for Windows 95, 98 and Millennium Edition (Me), a move that some industry analysts and end users called a rather transparent attempt to push companies to the new Windows 2000 Professional desktop operating system.

According to a Microsoft spokeswoman, the decision reflected "declining demand for consumer Windows." But analysts noted that Windows 95 and 98 have been in heavy use at many corporations, and they said they expect some companies to be affected by the changes.

Several corporate users who spoke with Computerworld said they don't expect the discontinuance of volume licensing for Windows 95/98 to affect their companies to any significant degree, so it's unclear what the overall impact will be on corporations.

"It's not unusual for me to speak with [clients] who are nearly 100% Windows 95 who never adopted 98," said Michael Silver, an analyst at Gartner Group Inc. in Stamford, Conn. "We still speak with some enterprises who still need, for whatever reason, to deploy Windows 9x into [2000] because they haven't tested Windows 2000 or they're not sure how to do it, or they're waiting to do their servers first."

"After a new product is released, it takes about five years for the old product to wind down," said Al Gillen, an analyst at IDC in Framingham, Mass. "There is still a fair amount of demand for [Windows] 98."

Microsoft program manager Simon Hughes said the company "believes that we've provided sufficient time with this announcement to allow customers who have a specific business need to deploy Windows 95 or Windows 98 to plan their purchases and deployments."

Hughes said customers can still purchase volume licenses for Windows 95/98 "for immediate or future use" through June 30. Only customers with

Open (five to 500 PCs) or Select (more than 500 PCs) agreements will be affected.

"It's being perceived by the market as a price increase, which comes at an unfortunate time," said Rob Enderle, an analyst at Cambridge, Mass.-based Giga Information Group Inc. "There's already a lot of competition, so this look at Microsoft like a taxing entity, and you don't want to feel that belief. I'm afraid this [announcement] did."

Still, Computerworld had no problem finding corporate users who said they wouldn't be affected by the Windows 95/98 volume licensing discontinuance. Windows Me, pri-

marily a consumer product, wasn't an issue for any of them. "We see Windows 95 and 98 coming to the end of their life cycles anyway," said Bob Dutile, a senior vice president at Cleveland-based KeyCorp. Dutile said his company has roughly 12,500 users on Windows 95, but he said he doesn't expect to need new licenses. KeyCorp also has another 6,500 users running Windows NT 4.0, he added.

"We're trying to move aggressively to thin clients, and we will be planning what, if anything, we're going to do with Windows 2000 as a client," Dutile said.

Guaranty Bank & Trust Co. in Oklahoma City is mainly an NT shop with "only a few 95s and 98s," said Tom Doutey, a vice president in IT, who noted that his company won't be affected by the volume licensing changes. "From a business point of view. I understand why [Microsoft is] doing it," he said.

"It's the nature of the beast," agreed Susan McKay, a vice president of customer and information systems at Aircast Inc. in Summit, N.J. "I really don't think this is some big plan on Microsoft's part to drive the world crazy."

Invensys Moves to Reassure Baan CRM Software Users

New CRM unit plans to add Web support, features

BY MARC L. SONGINI

Invensys PLC next year plans to beef up the customer relationship management (CRM) software it bought when acquiring ailing Baan Co. by adding Web support and other new features. Some Baan users greeted the plans with relief and said they had become concerned about the future of the applications.

"We had started with Baan, and when they went through their troubled times, we were holding our breath to see what

would happen," said Eugene Connor, CRM business manager at EMC Industries Corp. in Decatur, Ga.

Two Products Dropped

London-based Invensys said it intends to phase out two of Baan's CRM products — a sales force automation tool called Matrix and product modeling software called Clinsys. The remaining CRM line will be split off from Baan and folded into a new Invensys CRM unit in Golden, Colo.

Baan's major CRM package — what used to be known as Baan FrontOffice — will become Web-enabled within a year, according to Invensys officials. They also said the company expects to add new CRM

tools aimed at indirect sales workers, as well as improved sales-configuration software and products for use on personal digital assistants and other handheld devices.

Connor noted that he's pleased with the changes under way at Invensys. EMC, a maker of concrete building supplies that uses Baan's sales force automation, customer tracking and contracting applications, has already seen an improvement in customer service since Invensys took over the struggling software vendor, Connor added. "Baan's service was limited and at times troublesome," he said.

Invensys took control of Baan in August in a $709 million deal after the Barneveld, Netherlands-based maker of business

applications had lost money for eight straight quarters.

Todd Roeller, the CRM technology manager at Flowserve Corp. in Irving, Texas-based maker of liquid-flow control products, said he welcomes the changes that Invensys plans to make.

"We're delighted," Roeller said, adding that some end users at Flowserve were concerned about technology "that might go away." Flowserve has been a Baan user for three years and relies on its sales configuration engine, among other products. The company is interested in the upcoming indirect sales software that Invensys has in the works, said Roeller, noting that the company next month plans to roll out a Web-based system that will let it make estimates

and place orders online.

Bob Kanuff, president and CEO of Invensys CRM, acknowledged that the unit's separation from the rest of Baan might confuse some users. But he said that should be minimal, because Baan and Invensys CRM are still part of the same overall company.

Tough Competition

Despite the initial reaction from installed-base users such as Roeller and Connor, Invensys could still have a tough time competing for new customers against the likes of Siebel Systems Inc. in San Mateo, Calif., and other CRM rivals.

Baan had neglected its CRM suite more than any other part of its product line, said Kelly Spang, an analyst at Current Analysis Inc. in Sterling, Va. The plan devised by Invensys CRM "sounds really good, but the proof will be in the execution," Spang said.

NEWS

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Out the Window

These products will no longer be included in volume licensing programs:

Windows Me:

Windows 95/98:

Consumer Windows Upgrade Advantage:

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Windows 2000 ADVANTAGE

The Web Magazine for IT Leaders Implementing Windows 2000 and Windows NT with Compaq Services and Solutions

Online this week:

POINT OF VIEW

Compaq Integration2000 delivers enterprise e-commerce solutions

Integrating enterprise applications recently got a boost with Compaq's Integration2000. The initiative helps solve the largest, most difficult business integration problems.
www.windows2000advantage.com/pov/
12-11-00_integration.asp

TECH EDGE

Understanding Microsoft Application Center 2000

The automatic detection and system resolution functions of Microsoft Application Center 2000 eliminate mundane administrative tasks and assure system availability without direct system administrator intervention.
www.windows2000advantage.com/
tech_edge/11-27-00_understanding.asp

Q & A

Brian Valentine, "chief cheerleader," driving force

Brian Valentine is a key player in Microsoft's Windows division, where, in addition to being "chief cheerleader," as he describes himself, he is also a driving force behind the evolution of Windows 2000.
www.windows2000advantage.com/qa/
11-20-00_valentine.asp

COLUMNS

Active Directory: to serve, protect, provision

The great thing about directories is that they provide a singular place for defining and storing important enterprise data. The bad thing about directories is that they provide a singular place for defining and storing important enterprise data.
www.windows2000advantage.com/columns/
11-27-00_activedirectory.asp

CASE STUDIES

Windows 2000 Group Policy can cut support costs, but requires up-front planning, training and testing

How would you like to cut your support calls by 60%? Or manage 150 sites worldwide with only two system administrators rather than one at each site?
www.windows2000advantage.com/
case_studies/11-06-00_grouppolicy.asp

NEWS >

Compaq, Andersen Consulting in enterprise bid

Compaq and Andersen Consulting have expanded their relationship to put Andersen's new and existing enterprise applications on Compaq ProLiant servers running Microsoft Windows 2000.

For the full story, visit: www.windows2000advantage.com/news/
12-11-00_bid.asp

CASE STUDY >

FreeMarkets guarantees uptime with server clustering

Using Datacenter Server, this business-to-business firm is matching increased customer demand with proportionally increased computing capacity while maintaining "mainframe stability."

For the full story, visit: www.windows2000advantage.com/300

Q&A >

Active Directory worth the internal Unix strife

Dan Kunetzky, vice president of systems research at International Data Corp., says that Windows 2000 is headed down a successful path. He also weighs in on a wealth of additional Windows 2000 topics, including the value Compaq and its "fine machines" bring to Microsoft Windows 2000.

For the full story, visit: www.windows2000advantage.com/300

MOMENTUM SERIES >

Active Directory helps to keep VPN management simple and effective

When companies set up VPNs, they have to maintain a list of authorized users and have some means of ensuring that anyone who is granted access to the VPN is on the list. Authentication mechanisms can range from a user name and password to a public key infrastructure (PKI) system that uses digital certificates.

For the full story, visit: www.windows2000advantage.com/
momentum/11-20-00_vpn.asp

www.Windows2000Advantage.com/300

E

GENERATION 2000 >

Microsoft Mobile Information 2001 Server enabling mobile users to go wireless

In anticipation of high projected wireless mobile Web and e-mail access demand, Microsoft's Mobile Information 2001 Server – which was introduced as part of the .NET enterprise server line – was created with Microsoft Windows 2000 mobile users in mind. Expected to become available during the first half of this year, Mobile Information 2001 Server will offer not only e-mail access, but access to calendaring and other wireless applications such as customer relationship management (CRM) and accounting.

The new server will be located in corporate networks next to the Exchange 2000 Server. In this environment, information destined for wireless users will be transferred from the Exchange 2000 Server to the Mobile Information 2001 Server, which in turn will send the data over the Internet to a wireless phone carrier. The wireless carrier will reformat the information for mobile phones, and transmit it over the airwaves to the appropriate recipient. Mobile users will be able to send e-mail or other data along a reverse path back to the Mobile Information 2001 server.

In addition, Microsoft will deliver a different version of the server for wireless telephone carriers. That server will allow wireless telephone firms to deliver corporate e-mail and other intranet data to mobile users more efficiently than would a corporate mobile information server.

"This is a very first step in our strategy of enabling enterprises to give their employees access to all the information inside the corporate firewall," says Patrick Fox, director of marketing for Microsoft's Mobility Group.

Some analysts believe Mobile Information 2001 Server is entering the market just as demand for wireless enabled applications is taking off.

For the full story, visit: www.windows2000advantage.com/
2000gen/12-04-00_mobile.asp

QUOTE OF THE WEEK >

"Integration2000 doesn't force you to abandon your existing, tightly-coupled legacy solutions. But since the world you have to connect to is expanding pretty dramatically, the chances are good that you will need to get content from some third party or hosted services, and this strategy will help."

— Dwight Davis
vice president
Summit Strategies

What is Windows 2000 Advantage?

The mission of Windows 2000 Advantage is to become your primary source of timely, useful information for planning and implementing Microsoft Windows 2000 on Compaq solutions and services.

Windows 2000 Advantage is a Web-only magazine because that lets us bring you, the IT leader, great stories that apply to your day-to-day work. We'll keep you up to date with a weekly e-mail alert so you don't miss a thing.

Windows 2000 Advantage is underwritten by Microsoft and Compaq. Its charter is to address the issues that most concern IT managers charged with keeping their companies on top of the latest and best solutions Microsoft and Compaq have to offer. Toward that goal, we offer a wide range of stories including case studies, columns and news to provide you with information you can't find anywhere else.

www.Windows2000Advantage.com/300

QUICKPOLL >

How much interest do you have in implementing Microsoft Windows 2000 in your small business?

21% Somewhat interested

71% Very interested

8% Not interested
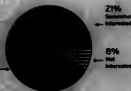
Cast your vote now at:
www.Windows2000Advantage.com/300

IDC's New Year's Prediction: Kiss Those ASPs Goodbye

Researcher's sixth year-end forecast sees continued optimism despite stock slump

BY MATHEW SCHWARTZ

Application service providers (ASP) will die. Internet stocks won't stage a comeback. And the hype about mobile connectivity will reach a hysterical pitch.

Those are just three of the 10 predictions that Framingham, Mass.-based research firm IDC

is making for the IT and e-business markets in 2001. For the sixth year in a row, the research firm polled its 700 analysts to forecast pending successes and failures in the coming year.

Last year at this time, IDC predicted a stock market correction in 2000. "We got the

big one right," said IDC Senior Vice President Jim Gantz. The firm also correctly forecast the death of dot-com paradigms and consolidation within the Internet segment.

But there were a few duds, such as predictions of virtual malls rising as magnets for commerce and an explosion of free Internet access.

For 2001, the mood is upbeat.

"We expect e-business investment by corporations to grow handsomely despite all

the noise about the crash and impending recession," said Gantz. Despite dot-com stock prices, many big corporations on the Internet are profitable and will continue to invest.

Gantz said it's important to monitor the global economy.

If it slows, "there will be a slowdown in capital investment, and IT investment will be included in that," he said.

And though IDC's regional analysts aren't reporting slowdowns, "we're not really economists," he said.

CIO Survey: 2001 Corporate IT Spending To Rise More Moderately Than in 2000

Efficiency gains, Y2k's end prompt ease in expenditures

BY LUCAS MEARIAN

The results of a survey of 150 CIOs by Morgan Stanley Dean Witter & Co. show that corporate IT budgets are expected to increase at a more modest rate in 2001 than they did in 2000.

CIOs surveyed said their companies plan to increase IT spending by an average of just 8% in 2001. That compares with an average budget increase of 12% in 2000. New York-based Morgan Stanley added. And 16% of the respondents said their IT investments will actually decrease from 2000 to 2001. The survey results were released Dec. 20.

Those results came as no surprise to Ed Tobin, CIO at Colgate-Palmolive Co. in New York, who said he's cutting his technology budget this year, mainly as a result of the efficiency of recently installed enterprise application integration systems.

"We've got a strategy covering several years where we've been implementing several new systems, such as SAP, all around the world and consolidating by decommissioning our legacy systems," he said.

Jack Cooper, CIO at Bristol-Myers Squibb Co. in New York, said his IT spending will re-

main level only because his company installed Y2k-compliant software in 1999.

Bristol-Myers installed SAP AG's R/3 enterprise resource planning software and Ariba e-commerce applications.

"That saved us a lot of money," said Cooper.

Cooper said technology initiatives in 2001 will focus on productivity issues, including supply-chain management and business-to-business e-commerce. He added that his shop is also planning to equip the Bristol-Myers sales and marketing force with more laptops and wireless communications devices and to implement video streaming.

"In research and development, we're looking for new compounds and molecules that are effective in treating new diseases," he said. "A lot of those activities are becoming more automated. Scalability requires us to look for automated solutions."

Charles Phillips Jr., a technology analyst at Morgan Stanley, said he agreed that the Y2k bubble contributed to spend-

ing on technology being front-end-loaded in 2000.

In addition IT spending soared in the frenzy of e-commerce activity that took place before concerns about the viability of many dot-com ventures dampened the enthusiasm for them, he said.

Wary of Overspending

Economic concerns have left many corporate leaders wary of overspending on IT, Phillips added. In fact, 12% of the CIOs who responded to the survey said they recently downsized their IT budgets because of the slowing economy. And 14% said they plan to keep a close eye on the economy and spend money more gradually in the first half of next year.

Tom Millikin, a spokesman for Procter & Gamble Co. in Cincinnati, said the company's IT budget has been growing moderately but is expected to change dramatically in 2001. Expenditures for infrastructure, for example, will level off or decline, while spending on Web-based applications will increase.

"Also, most organizations have an insatiable appetite for bandwidth, and we're no different," he added. "We'll continue to invest in bandwidth around the world."

The Morgan Stanley results are in line with a recent *Computerworld* survey of 100 IT managers at organizations that have at least 400 employees.

AVERAGE IT BUDGET INCREASE IN 2000   **12%**

AVERAGE IT BUDGET INCREASE IN 2001   **8%**

SOURCE: MORGAN STANLEY DEAN WITTER &

IDC's Top 10 Predictions for 2001

1. Internet stocks won't stage a comeback.

WHY? After gauging the mood of investors, financiers and entrepreneurs, IDC says that, like their PC stock brethren after the 1983 crash, Internet stocks will take years to rebound.

2. The Internet stock crash won't affect investment in e-business.

WHY? Not all e-business is related to volatile sectors, and the 7 million brick-and-mortar businesses building up an online presence far outnumber the fewer than 5,000 venture-backed U.S. start-ups. Furthermore, 50% of U.S. commerce sites are now profitable.

3. B2E (business-to-employee) will become a hot market sector.

WHY? With double the number of employees able to access Web-based intranet systems from 2000 to 2003, companies will realize the cost savings and spend more to keep intranets up and running.

4. Hype around mobile commerce and Internet connectivity will reach hysterical levels.

WHY? By 2003, more than 1 billion phones on the planet will be capable of Internet access. But consumers won't necessarily use them, even as vendors deluge them with offers.

5. ASPs will disappear.

WHY? ASP vendors will attempt to distance themselves from the ASP taint of dot-com stock crash. Furthermore, ASPs will find that they have to offer such things as integration and customer support, security and training.

6. A massive consolidation of e-marketplaces is on the way.

WHY? There are too many marketplaces for them all to survive. And not even big ventures like the auto industry's Covisint or the travel industry's Orbitz are safe, according to IDC.

7. Small business will emerge as a hot market sector.

WHY? Market saturation will force vendors to court small businesses, which account for 40% of the off-line economy but only about 20% of the Internet economy.

8. Linux deployments will remain a wild card.

WHY? Simply because IDC can't track Linux deployment through licenses — there often aren't any. So while IDC forecasts a growth in Linux server deployments of 35% to 45% from 2000 to 2001, that figure could go higher or lower based on competition from Microsoft and Novell, operating system improvements and Linux vendor profitability.

9. "Web talk" services will be all the rage in the telecommunications industry.

WHY? Web talk (voice over IP) is cheap, so companies that give it away can make premiums on such things as broadband. IDC says the number of Web-based telephony users will grow from 40 million this year to 400 million in 2004.

10. "P2P" will become a red-hot buzzword but will get a cool reception in corporations.

WHY? Though Napster Inc. had more than 35 million members in 2000, and peer-to-peer (P2P) hype is rampant, "what's not there are signs that IT professionals will abide by such an anarchic solution," says IDC Senior Vice President Jim Gantz.

NEWS

Holiday Shoppers Leave CRM Data in Their Wake

Saks one of many firms beefing up storage for improved customer service, contacts

BY MICHAEL MEEHAN

CHRISTMAS may be over, but retailers have been busy making their lists this holiday season and will now begin the work of checking them twice.

Bill Franks, senior vice president and associate CIO at New York-based Saks Inc., bought 2.6TB of additional storage last year to help capture as much information as possible about the company's customers.

"As we get more sophisticated and as the market gets more complex, you need to know where you have room to move," Franks said.

He said Saks originally had a "satisfactory" 1.9TB of storage, "but we weren't where I'd like to be."

Once shopping subsides after the holidays, Franks and his team will begin to mine the data, identifying customer buying patterns and store trends.

"We really believe knowing more than your competition is going to be a strategic advantage as we move forward," Franks said.

William Hurley, a program manager at Boston consulting firm The Yankee Group, said brick-and-mortar retailers have begun to learn about the importance of data from their online brethren.

"The dot-coms showed you can track behavior and interest and have all this rich data at your disposal," Hurley said. "That it's moving to the brick-and-mortar world now is no surprise."

He said that Saks' increased storage "reflects the immen-

sity of data they can collect" and that retailers will likely see exponential growth in their storage needs each year.

"Some e-tailers are finding 100% growth quarterly, which gives you an idea of how much data we're talking about here," Hurley said.

Storage Boom

John Madden, a storage analyst at Summit Strategies Inc. in Boston, said many retail IT managers are seeking beefed-up storage to merge the information of their online and brick-and-mortar businesses.

"They're still trying to figure out how to connect that synergy," he said.

Madden said he also sees storage as a winning pitch for IT managers.

"The possibility of greater customer retention is an easier sell on ROI than new switches for the network," he said. "You can show where it

will have a definite impact on the bottom line."

Hurley said greater chunks of stored information and better data-mining software have "a chicken-and-egg effect," always driving companies to get more of both.

Bob Sampson, vice president of sales and strategy for storage systems at IBM, said customer relationship management and enterprise resource planning software had proved to be a particular boon to storage vendors seeking clients in the retail market.

"We've identified retail as our second-largest area of opportunity, behind banking and finance," Sampson said.

For Franks, the expansion means more than increased storage; he is eyeing building a completely Web-enabled storage-area network.

"We're looking to use this data to keep our shelves stocked, to run promotions and to forecast for next year's high season," he said. "This is our crystal ball." ◆

SAKS' FRANKS: Customer data "is our crystal ball."

Online Retailers

aren't taking place in a vacuum. Ritter and other Yankee Group analysts said they're keeping their eyes on a growing list of dot-coms that could begin to show signs of meltdown as early as this month.

"In the end, people are realizing that e-commerce is fundamentally retailing," said Robert Drescher, CEO of Optivo Corp., a Palo Alto, Calif.-based e-commerce consulting firm. "Cutting costs and streamlining only gets you so far. Effective pricing is also key."

EToys spent more than $94 to acquire each customer in 2000, and many other pureplay online retailers are spending at a similar pace, said Ritter. E-retailers with a better chance of success tend to spend about $10 to acquire a new customer, said Ritter.

Rebecca Nidositto, an ana-

lyst at The Yankee Group, said the approach used by companies that have failed or are in jeopardy of failing reflects a fundamental problem with their business models. "The brand-first business model doesn't work," said Nidositto.

"This is in effect putting the cart before the horse." Customer acquisition costs at these firms, she added, are typically "way out of line with the growth of the business."

Paying Customers?

The failure of Petsc.com in early November is a prime example, said Ritter. Although the Internet pet-supply store had been ranked near the top of all online retailers in terms of customer conversion rates, the company shackled itself with gross margins of negative 27%, said Ritter. "They were charging customers less for the shipping of products than they actually had to pay to get the products into the hands of the customers," he said.

Success comes from more than a lot of Web traffic and conversion rates, said Ritter. "It's really a juggling act," he said of what he calls the "seven key factors for success in online retailing" (see chart).

Although no single factor is more important than the others, if one is missing from a

Super Seven

Seven key factors for success in online retailing:

1. Sufficient margins
2. Tangible value proposition
3. Cost-effective customer acquisition
4. Web experience
5. Significant traffic and high conversion rates
6. Efficient and effective fulfillment
7. Impeccable customer support

firm's business plan, it could easily "lead to their demise," he said.

On average, both online and off-line retailers fared worse this holiday season than many experts predicted, said Barrett LaMothe Ladd, an analyst at Gomez Advisors Inc. in Waltham, Mass.

Through Dec. 17, holiday sales were running 8.2% lower than for the same period in 1999, according to the International Council of Shopping Centers in New York.

Early results from this holiday season have also shown that multichannel firms have a leg up on online-only retailers. "The clicks-and-mortars have a cost and convenience advantage over the pure plays and are able to more effectively manage the dry capital markets and demanding consumers," she said.

"Once our customers have we were online, they came, and they came in droves," said Cynthia Lin, a spokeswoman

for Bentonville, Ark.-based Wal-Mart Stores Inc. More than half of Wal-Mart's 60 million customers shop online, she said.

Still, some analysts are predicting that Wal-Mart and competitors like Kmart Corp. will generate same-store increases of less than 3% for this holiday period, which would make it one of the weakest seasons in the past decade.

Nordstrom Inc. in Seattle reported preliminary combined online and off-line sales of $394.6 million for November, an increase of 9.2% compared with the same period in 1999. Internet-based sales were up 400% for the month compared with 1999, said spokeswoman Shasha Richardson.

When asked how Nordstrom managed to get it right the first time, Richardson said that while the Internet interface might be new, the business of retailing isn't. "It's still retail, just in another environment," she said. ◆

NEWS

EToys Short On Cash, May Look for Buyer

Holiday season brings bad tidings; poor sales lead to cut in workforce

BY TODD R. WEISS

THE HOLIDAY season isn't bringing much joy to eToys Inc. Instead, the financially troubled online toy retailer is getting the business equivalent of a lump of coal: lower-than-expected sales that will likely force it to lay off workers and could cause the company to run out of money by March.

Los Angeles-based eToys has warned that financial results in its third fiscal quarter, which ended Dec. 31, are expected to be significantly below plan, with sales estimated to be only about half of what company officials previously predicted. Revenue for the

quarter is now expected to come in at $120 million to $130 million, compared with earlier expectations that it could reach the $240 million mark.

EToys predicted that if only has enough cash on hand to meet its needs through the end of March, three months earlier than a previous estimate. The company said it needs a "substantial cash infusion" in order

to continue operating and added that it can't even offer assurance that it will be able to hold out until March without new funding or a possible sale.

In response to the cash crunch, eToys said, a workforce cut and other reductions in operating costs are due to be announced this month.

Facing Competition

EToys beefed up its Web site, database server, call centers and product distribution capabilities to prepare for this year's holiday shopping sea-

son. But Kevin Silverman, an analyst at ABN Amro Inc. in New York, said sales figures through mid-December just weren't good enough for the company.

"They had to start coming to grips [with the fact] that the sales weren't going to materialize," Silverman said. "The surprising thing was how far additional sales dollars eToys was able to generate, when the overall channel is very successful."

One big problem for eToys, Silverman said, is that well-known retailers such as Toys R

Us Inc., Wal-Mart Stores Inc. and Target Inc. have launched improved Web sites that offer toys. For example, Woodcliff Lake, N.J.-based Toysrus.com Inc., the online unit of Toys R Us, teamed up this past summer with Seattle-based Amazon.com Inc. to develop a co-branded Web site that sells toys online.

Barrett Ladd, an analyst at Gomez Advisors Inc. in Waltham, Mass., said eToys is suffering from the same ills that have been afflicting other online retailers that lack an established brick-and-mortar presence in cutthroat niches such as toys and pet supplies.

"The pure-plays are incredibly challenged to put together a viable business strategy to today's economy, with the capital markets nearly completely dried up," Ladd said. ❿

Struggling Priceline Gives Up Down Under

Myprice next target in series of cutbacks

BY MICHAEL MEEHAN

Struggling online discounter Priceline.com Inc. took another hit in December, announcing that a company it set up last year is dropping its plan to launch a name-your-own-price Web site in Australia and New Zealand.

Norwalk, Conn.-based Priceline.com, along with several other investors, formed the Myprice Pty. venture in February, and the Sydney, Australia-based affiliate began selling telephone minutes on a name-

your-own-price basis in September. Plans called for Myprice to start offering discounted travel services this month.

But Priceline, which has been reeling financially in recent months, said that it's scuttling the travel services launch and that it will fold the Australian venture. Refunds will be given to any customers who have unused phone minutes, the company said, adding that it expects to take a charge related to the Myprice shutdown during this quarter.

The move — the latest in a series of cutbacks at Priceline — came just two weeks after the company disclosed that it was postponing the addition of

several new name-your-own-price services and dropping plans to enter the Japanese market through another joint venture. As part of that announcement, Priceline also said it will lay off 11% of its employees — an action that follows a previous round of layoffs announced in November.

Ongoing Plans

In October, Priceline contracted with Atlanta-based Equant Inc. to help build Web sites in Europe in addition to the ones planned for Australia and Asia. Priceline spokesman Brian Ek said the Australian closing would have no effect on the company's plans to

launch Web sites in Europe and southeast Asia.

Ek added that Priceline has already gone through the initial launch of its London-based site, which offers travel products. He said no time line has been established for the other international sites.

Krista Pappas, an analyst at Waltham, Mass.-based Gomez Advisors Inc., said the decision to drop the Australian venture made sense in the wake of the business setbacks that Priceline has suffered during the past six months.

"Right now, it's important for [Priceline executives] to get their own backyard in order before they delve into new territory," Pappas said. "They need to salvage what has turned into a fiasco at this point." ❿

No, No . . . Whoa

Online retailer eToys recently warned that its third-quarter earnings won't match its earlier estimates by a wide margin, leaving the company reeling several options:

- ■ Layoffs and other reductions, expected this month
- ■ A merger or sale to another company
- ■ A new round of financing

Multilingual Domain Name Registrations Hit 700,000

BY TODD R. WEISS

The company that maintains the master database of Internet domain names said last month that more than 700,000 multilingual Web addresses have already been registered since it began testing the viability of using non-English characters in Web site addresses in November.

But VeriSign Global Registry Services (GRS), the unit of VeriSign Inc. in Mountain View, Calif., that manages the back-end piece of the domain name registration process, added that it's still taking with the Internet Engineering Task Force (IETF) and other standards bodies about the best approach for developing a global

standard for registering multilingual domain names.

VeriSign GRS reiterated that it plans to comply with a standards process being carried out by the IETF, and it said multilingual domain names registered as part of its test-bed program should remain functional after the testing is completed. However, the firm cautioned that the "external representation" of multilingual Web addresses could change, depending on what the IETF decides.

Proponents of multilingual domain names said they hope the names will help open up

the Internet to more users around the world. But critics like the Internet Society — a nonprofit group in Reston, Va., that acts as the "organization home" for the IETF and the Internet Architecture Board — have said that the commercial testing by VeriSign GRS is premature without an agreed-upon standard.

Mark Fernandes, an analyst at Merrill Lynch & Co. in New York, said multilingual domain name registrations could eventually reach a level of 1 million per quarter. VeriSign GRS had predicted about 300,000. ❿

Microsoft CEO Outlines Priorities, Details Plan to Cut Costs

Ballmer seeks reduced resource expenses

BY CAROL SLIWA

In the wake of slumping revenue forecasts, Microsoft Corp. CEO Steve Ballmer last month issued a memo to employees outlining the company's business priorities and efforts "to reduce planned expenditures very significantly, both in the short term and the longer term."

Ballmer issued the memo the same day Microsoft warned the investment community that its quarterly financial results would likely be lower than expected. But despite the timing, a Microsoft spokeswoman said the memo was "not horribly unusual."

"Steve sends e-mails out to the employees of Microsoft

reasonably routinely," company spokeswoman Beth Jordan said, adding that the memo was intended to serve as a wrap-up for last year and a prospectus for the coming year in terms of priorities and strategy.

"A memo like this is never routine," countered Rob Enderle, an analyst at Cambridge, Mass.-based Giga Information Group Inc. "It is often common for a [chief financial officer] to issue belt-tightening memos when a company is forecasting relatively flat revenue going forward. However, for the president to initiate such a memo raises the impact and the amount of concern, in theory, that the management team is experiencing."

Jordan said Ballmer didn't launch any "huge initiative" within the company to reduce costs. But Ballmer did note in the memo that he asked his direct reports "to significantly reduce our resource investments vs. the [Fiscal Year 2001] Plan."

"Although we are a profitable company with good growth prospects, we do not have the financial resources, the people or the interest in doing things that are not consistent with our priorities," Ballmer wrote.

His priority "scenarios" include Windows PCs and the .Net platform software as "the foundation going forward." On top of that platform are productivity software, enterprise servers and tools, its MSN messaging service, non-PC devices, and business applications for small and midsize companies.

"It is important that they pointed out that the PC remains the center of the Microsoft universe — that .Net, for example, is an important strategy but it is not a replacement strategy for PCs," said Tom Bittman, an analyst at Gartner Group Inc. in Stamford, Conn.

Ballmer told employees that the company would "continue being a lot more decisive about not doing certain things."

"Decisions to spin off Expedia, sell our interest in Sidewalk, create new joint ventures for our CarPoint and HomeAdvisor properties, and close

down our efforts around TaxSaver and Microsoft Learning Technologies are examples of where we have gotten crisper about our priorities," Ballmer wrote.

Core Technology Focus

Ballmer also noted a recent decision to "not ship the Local Web Storage system with Office 10" in order to focus energy on a database server codenamed Yukon, which will be the next release of SQL Server. He said that although Yukon is "two years or so off," it "will be key to our next-generation database, file system, e-mail and user interface work."

He called Yukon "a core .Net and Windows technology" and told employees that all development groups will be asked "to organize their product plans to have new versions available in that time frame based on Yukon and our .Net programming model."

Although the company will work to cut costs, Ballmer stressed that hiring new employees and investing in existing staff remains a "super-high priority."

"To be clear, resource reductions don't translate into employee-paying freezes," Ballmer wrote. "As we focus on our top priorities, we will reduce unfilled positions and reprogram the resources there." A Microsoft spokeswoman confirmed that there are roughly 5,600 unfilled positions and employees 42,000 worldwide.

Acknowledging the recent stock market drop, Ballmer told employees that most of the stock "will be reviewed within the next month for increases in base salary or bonus opportunities. He noted that the firm has drifted behind in its goal of having base salaries that are higher than those of two-thirds of the industry."

In keeping with cost containment, Ballmer also said the company will "get a better handle on discretionary expenditures like travel and entertainment," strengthen "the review and approval process for large-scale expenditures" and do additional "particular purchasing and reduce building construction costs."

"To make their numbers, they're going to have to do cost containment. It's happened to every other company," said Peter O'Kelly, an analyst at Patricia Seybold Group in Boston.

Task Force Focusing on IM Interoperability Protocol

AOL competitors push for standards

BY JENNIFER DISABATINO

Despite having heard proposals for three instant messaging (IM) standards, the Internet Engineering Task Force (IETF) appears likely to move toward a way to make different IM systems work together rather than select one standard for all IM services to use.

At its meeting in San Diego last month, the working group considered proposals that would make IM programs use the same protocol to provide so-called presence information, which enables one user to know if another is online. The protocols would also allow users to chat among different messaging systems, including America Online Inc.'s AOL Instant Messenger (AIM) and Microsoft Corp.'s MSN messaging service.

The IETF is an international organization that oversees Internet technical standards. The organization has pared down a

list of 10 proposed protocols to three (see chart). IETF officials have said all three of those protocols appear to interoperate within AOL's framework.

AOL, has by far the largest number of IM users in the market. Dallec, Va.-based AOL's IM and ICQ control 90% of the IM market, according to an estimate by iCast Corp., a now-defunct AOL rival.

Competing services have complained that AOL blocks their customers from communicating with AIM users. AOL says it won't open its IM service until other Internet services use secure protocols, which is why AOL's competitors have asked that standards be adopted.

The working group will accept comments on the CPIM proposal until Jan. 15, said Athanassios Diacakis, chief technology officer at Network

Projects Inc. in Pittsburgh and a member of one of the IETF's working groups.

"Once you have interoperability, the rest is not [resolved], but [it's] less of a problem," said Diacakis, who is a proponent of the Presence and Instant Messaging protocol (PRIM).

Diacakis said IM services should have the option of installing a simpler standard such as PRIM or the Instant Messaging Exchange Protocol.

Meanwhile, Jon Peterson, a senior architect at Level 3 Com-

munications Inc. in Broomfield, Colo., is the IETF's proponent for SIP for Instant Messaging and Presence Leveraging Extensions, which is based on the Session Initiation Protocol (SIP). When installed, SIP finds the recipient of an e-mail and "talks" with its e-mail server to identify what kind of information will be transferred in the message.

"SIP is something a fly with a sledgehammer" for current IM use, Peterson said, but for future IM use, SIP appears to be the most flexible option.

Universal IM

The following are three protocols proposed to the IETF:

PRIM
The Presence and Instant Messaging protocol is intended only for the transfer of text information. It runs over TCP/IP and is backed by representatives of Fujitsu Ltd., Network Projects Inc., AT&T and The Mitre Corp.

SIMPLE
SIP for Instant Messaging and Presence Leveraging Extensions uses an existing protocol, Session Initiation Protocol, and would allow for the transfer of information through different kinds of applications, such as an audio file or text. Its backers are Microsoft, DynamicsoftInc., Level 3 Communications and AT&T Corp.

IMXP
Instant Messaging Exchange Protocol is a messaging-focused approach built on top of the Block Extensible Exchange Protocol, which transfers large blocks of information rather than more granular bits.

Pentagon to Spend $20M on Health Benefits Portal

Beneficiaries will be able to access services online

BY JULEKHA DASH

The U.S. Department of Defense (DOD) plans to spend as much as $20 million during the next several years to create a Web portal that will enable 8.5 million employees, dependents and retirees to view their health benefits information online. Users will also be able to perform tasks such as scheduling appointments and viewing test results online.

"They've gone to the next generation [of electronic health] that everyone is talking about doing," said Mark Anderson, a vice president at Stamford, Conn.-based Meta Group Inc. and a former hospital CIO.

Integic Corp. in Chantilly, Va., will develop a prototype in the next few months and plans to test it at three military facilities — including Andrews Air Force Base — in Maryland, Virginia and North Carolina between February and May, said Capt. Brian Kelly, director of e-health at the DOD.

During the pilot phase, the DOD will select a health content provider. Atlanta-based WebMD Corp. and Blue Bell, Pa.-based IntelliHealth Inc. were two possible vendors mentioned by Kelly, though the agency has yet to determine which company will supply the content.

Layers of Security

Kelly said the DOD will continue to provide greater layers of security as the Pentagon puts more sensitive information on the Web. These security measures will begin with password protection and eventually include Secure Sockets Layer encryption and public-key infrastructure.

With the exception of a few leading teaching hospitals, the DOD is about five years ahead of 90% of health care providers, said Anderson. While many private and nonprofit health care organizations are talking about creating Internet portals, many lack the money or the capabilities to embark on such initiatives, he said. "The average hospital has 20 different [clinical] systems," he said. The military, on the other hand, has had its entire database of clinical records online for several years, Anderson said.

Mike Davis, a research director at Gartner Group Inc. in Stamford, Conn., said health care providers that have initiated electronic-health portals have yet to move beyond "brochureware." The obstacles most health organizations face, he said, include inflexible legacy systems and networks that don't have enough bandwidth. ▶

FTC Seeks Input on Revisions to Credit Card Data Privacy Guidelines

Rules would restrict data sharing with affiliates

BY MARIA TROMBLY

The Federal Trade Commission (FTC) has issued a request for public comments about a proposed set of data privacy guidelines that would affect companies looking to share credit records and other consumer information with affiliated businesses.

The proposed revisions to the Fair Credit Reporting Act (FCRA) include requirements such as making sure individuals are notified about such data-sharing arrangements and are given the ability to opt out of having their personal information transferred from one company to another.

James Grady, an analyst at Giga Information Group Inc. in Cambridge, Mass., said the FTC is proposing the privacy guidelines partly because of the growth of affiliate marketing programs that

link e-commerce Web sites operated by different online retailers.

"Privacy groups and activists have sounded the alarm, accusing a lot of these companies of forming affiliate relationships as a way of getting around privacy restrictions," Grady said.

The guidelines clarify how the FCRA applies to firms that aren't traditional credit-reporting organizations, such as banks and credit card companies. FTC spokesman Howard Shapiro said the revisions are primarily aimed at retailers — although he wouldn't comment on whether the commission is targeting e-commerce sites.

Notifying Web Shoppers

The five members of the FTC voted unanimously to post the proposed guidelines in the Federal Register and to open a public comment period that's scheduled to run through the end of this month. According to the proposal, online shoppers and other Internet users must be given the right to opt out whenever a company shares transactional data or other personal information with its affiliates.

The FTC said its guidelines are similar to proposed regulations issued by a group of federal banking agencies that includes the Federal Reserve System's board of governors, the Federal Deposit Insurance Corp., the Office of the Comptroller of the Currency and the Office of Thrift Supervision. The guidelines also match the privacy provisions of the Gramm-Leach-Bliley Act that Congress approved in 1999 to deregulate the financial services industry, the commission added. ▶

AT A GLANCE

Opting Out

The FTC said opt-out notices or links must:

■ Be labeled appropriately and placed on Web pages that users frequently access, such as those where transactions are completed.

■ Include text or visual clues to encourage users to scroll down the page if that's necessary in order to view the entire notice.

■ Be free of other elements, such as graphics or audio components, that could distract attention from the text of the notice itself.

The Cisco Kid Provides A Peek Behind the Scenes

CEO Chambers touts speed, 'virtual close'

COMPUTERWORLD'S James Cope recently spoke with **John Chambers**, the president and CEO of Internetworking superstar Cisco Systems Inc. in San Jose, about how his company works, touching on topics as varied as the need for speed, employee empowerment and Bobby Knight. Here are some excerpts from that conversation.

Q: You frequently point to speed as a key success factor for companies competing in an information economy. Why is that?

A: It's really very simple: The faster a business can go to market with a product or service after recognition of an opportunity, the greater its chances of gaining meaningful market share and pulling away from the pack. We could do 10 acquisitions a month if we had to. Then, of course, we have the virtual close [of our financial books].

Q: Exactly what do you mean by "virtual close"?

A: You can capture within eight hours ... exact earnings per share, revenues, expenses, margins by every single product, by every single function across the company. So you know where you are at any point in time. What it allows you to do then is to react — to address issues when you still have time to do it.

Q: Can you elaborate on how the virtual close works? Can other companies do the same thing?

A: Yes, but the leaders of the business have to believe it's worth the investment to implement. And then you go with common data architecture and data applications designed to

CHAMBERS: "How do you lead very talented but challenging people?"

lead up to getting the virtual close. You have to tie together your e-commerce capability with customer support, with head count, with your virtual manufacturing. All that together adds into the virtual close.

But the real power of the virtual close—the people miss on their first cut is this: It isn't just for preventing surprises for the CEO and CFO. That's what gets the headlines. The real power is, once you have the data in an appropriate format, you empower decision-making as far down in your corporation as you want to — so decisions that used to have to come to the CEO or CFO. But empowerment only works when you have a mission and goals — you know where you're going. Otherwise, you get chaos.

Q: You reinvent an MBA from Indiana University, and when we were starting informally earlier you mentioned its former basketball coach Bobby Knight. What can business leaders learn from Knight's drama?

A: You have to decide what kind of culture you want for your leaders. When the leaders get outside the culture, I think you have to step up to the issues. The question is, how do you lead very talented but challenging people? Once you let them get outside the box too far, it's very difficult to bring them back in. That's one of the important things to learn as a leader.

Q: What do you like most and least about your job?

A: What excites me is interacting with the customers and potentially changing the way the world works, lives, learns and plays. The toughest thing to do as a leader is to make the management changes that need to be made. If you ever have to lay off anybody, that's even harder. I had to ... lay off 5,000 people when I worked at Wang. It about killed me.

Former Lucent Exec Named Chairwoman at Avaya

Spin-off partakes in leadership swap

BY JAMES COPE

In a convoluted case of executive swapping, Lucent Technologies Inc. spin-off Avaya Inc. has named former Lucent Vice President Patricia Russo to be its chairwoman — a position last held by Henry Schacht, who gave up that job in October to become interim chairman and CEO at Lucent.

Russo, 47, was president of what's now Avaya from 1993 through 1997, when the Basking Ridge, N.J.-based vendor of enterprise networking products was still part of Lucent.

More recently, Russo was executive vice president and CEO of Lucent's service provider networks group before leaving the company last August as part of a management realignment that preceded the later shake-up that resulted in Schacht taking over as CEO.

Since then, Russo had been working as an independent consultant for other companies in the telecommunications industry.

At Avaya, which was officially spun off from Murray Hill, N.J.-based Lucent in the fall, Russo will assist CEO Donald Peterson in running the company. Peterson, which also Avaya's president, was named to the additional position of vice chairman.

Restructuring a Priority

In an interview, Russo said one of the primary challenges in her new position will be to continue to execute a restructuring of Avaya, which is now targeting its networking products at communications services providers that in turn sell to corporate users. Russo added that she'll also "focus on executing in what we see as high-growth areas, such as IP telephony."

Asked whether the association of Avaya with financially strapped Lucent is an advantage or a hindrance for the new company, Russo said Avaya

RUSSO: Making Avaya a separate company with the right thing to do.

benefits from its Lucent heritage but can now function better as an independent entity.

"Making it a separate company was the right thing to do," said Russo.

In October, Lucent reported lower-than-expected earnings for its fiscal fourth quarter and warned that similar results are likely in the three-month period that ended Dec. 31.

At the same time, the company ousted CEO Richard McGinn and named Schacht to take over while it searched for a permanent leader.

Schacht, 66, was CEO of Lucent from 1995 to 1997 and continued as its chairman into early 1998. But his current job was further complicated in November, when Lucent said it had discovered a $125 million shortfall in the revenue reported for its fiscal fourth quarter — a finding that was expected to lead to a further reduction in earnings for that period.

Peter Bernstein, an analyst at Infonautics Inc. in Ramsey, N.J., said Russo's appointment as Avaya's chairman "should instill some confidence among the customer base and boost employee morale" at the spin-off. ■

THE ANSWER IS EASY.

MARYFRAN JOHNSON

Got Good People?

YOU'VE JUST READ the key question of this bright new millennium. The perennial three R's of IT hiring (recruiting, retraining and retaining) won't diminish in importance at all in 2001. Without the right people to do the real work, all the grand project plans in the world are

just another round of PowerPoint slides. The continuing escalation of e-business, the compelling need for information security and the ever-closer relationships with customers, suppliers and partners mean companies of all sizes need talented technologists to sign on — and stay on.

The good news is that rehiring is fast becoming the fourth R, as traditional companies' e-ventures are attracting dot-com refugees, lured back not just by money but by a host of other career advantages. Our Annual Hiring Forecast (page 36) points out how larger traditional companies have the benefits of scale, provide more IT resources and bigger budgets, and still offer technology challenges. Have you met any CIOs lately who aren't making e-business a priority? Me neither.

A recent survey of 150 top CIOs, released by Morgan Stanley, said IT budgets would increase about 8% this year, primarily in databases, online marketplace software, e-commerce and networking equipment. That maps nicely with where we see the hiring trends. Our forecast pegs the top-demand IT jobs

turning up in systems integration and infrastructure work, e-business architecture, customer relationship management software and wireless application development.

One downside that hiring managers will see is an onslaught of applicants demanding higher salaries than their experience may justify. How many of us have heard stories about an entry-level Web developer candidate, just out of college and completely sans experience, looking for $75,000 a year? That inflation in salary expectations is an unfortunate echo of the dot-com boom. But the upside is the increasing supply of serious candidates — people looking for a lot more than stock options — and an expanding universe of outsourcers and service providers willing to take on fixed-fee, short-term projects.

So expect to see plenty of IT résumés, but only a few with the well-rounded technical talent and business savvy you need. Even more important, examine the fit between the candidate and your corporate culture. There want the right firm as much as you want the right people. ◗

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PIMM FOX

From Israel, A Familiar Story About IT

THERE IS SOMETHING normal going on at Hadassah-Hebrew University Medical Centers, located in one of the small valleys of Jerusalem.

According to Edi Landau, network manager for the information systems division of the 1,000-bed nonprofit hospital, doctors expect too much from the computer system while funding is limited. Meanwhile, doctors complain that the hospital lacks the kind of Internet connectivity they need for easily sharing graphics with colleagues.

To make things worse, these realistic assessments lead the internal IT teams to be less than enthusiastic in recommending wholesale change. After all, they'll have to support any new equipment.

How do you make a generational leap from ooe technology network to another with limited funds, legitimate pressure from users and pragmatic assessments from your internal IT team?

Compared to many U.S. hospitals of similar size, Hadassah uses an antiquated IT platform that doesn't address some physicians' requirements. Landau says one reason for Hadassah to avoid a change is, say, a Webbased PC environment is the large amount of technical support needed that Hadassah can't afford.

Yet Batami Sadan, Hadassah's director of information services, has developed a plan she hopes will take IT as a tool and refashion it into a strategic asset. Sadan demonstrates the kind of business leadership that IT leaders must have in order to shift the focus of the corporate IT review.

Her plan looks at strategic objectives for IT in a four-year time frame and lists the plan's benefits to hospital customers, plus the physicians, nurses and staff who interact with the system.

The report discusses clinical workflow and a new information portal and defines IT's objectives for such functions as laboratories, finance, supplies and logistics in the context of budgets with target dates for implementation. Only by giving specific figures and timetables can you motivate budget makers to allocate money.

Sadan is trying to get senior management to buy into her plan. She says she knows that without widespread support, changes can be difficult and lengthy to implement.

And if you need to change your organization's image and get more users involved in IT decisio-

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"NUTS. THIS YEAR WE HAVE TO FIND REAL JOBS."

NEWSOPINION

making, that's a plus, too. That's why Sadan says a physician with medical informatics expertise, for instance, should head the medical computerization unit.

While Sadan laments what she calls an inadequate budget, she feels that part of her role is to alert people to the strategic advantage of IT. Without the financial support, Sadan will be unable to provide the service her hospital staff requires, but at least her plan gives people something to rally around and helps frame the debate of where to put IT resources.

That should be your role as well. ▶

DAVID MOSCHELLA

Don't Look to Internet to Solve Voting Problems

AS PART of the aftermath of our recent electoral nightmare, numerous academic and governmental organizations have already started trying to figure out how we can avoid another vote-counting disaster. One thing is for sure: The Internet isn't the answer. Indeed, computer networks are likely to remain a relatively small part of the picture.

No doubt, you have already heard some people suggest otherwise. If Visa, Citicorp and Nasdaq can handle millions of error-free transactions per day, why shouldn't our country have a 21st-century computer-based voting system capable of similar accuracy? And if the Internet can be used to file your taxes, pay your bills and manage your portfolio, why isn't it safe enough to register your political preferences?

Similarly, it has often been correctly noted that local voting is one of the biggest barriers to voter turnout. The only realistic time for commuters to vote is either before or after work. They then typically face long lines as everyone goes to the polls at more or less the same time. So it's only logical that if people could vote from somewhere near their workplace, voter participation would significantly increase.

High-volume transaction processing and location-independent system access are certainly things that computer networks tend to be good at. Voting systems are indeed very much like the financial or reservation transaction processing systems. All these systems need to authenticate users and then reliably and efficiently repeat and record the same set of basic transactions. And if this transac-

tion processing is done over a network, it shouldn't matter whether one votes in one's town or from across the globe.

It all sounds so familiar and sensible. But think about it. The government would have to build a system capable of processing 100 million transactions in 30 states over a 16-hour period. This system would then, in all likelihood, sit idle for about two years, and then need to be fired up again. From a cost/benefit perspective, the huge investments in databases, servers and software just isn't worth it, even at an individual state level.

Using the Internet is even more problematic. In addition to all of the transaction processing problems, the potential for abuse or sabotage is still real enough that election overseers are unlikely to allow large-scale voting to be done purely over a network. A more realistic possibility might be some sort of ATM-like system [News Opinion, Dec. 18], which could use magnetic stripes or smart cards, along with passwords and polling-

place cameras, to provide the required voter authentication. But the only way to justify the huge costs of such a system would be to use the cards and systems for other significant purposes.

All this suggests that state and federal voting will remain an off-line experience at local polling places, at least for the foreseeable future. Individual states will, of course, do lots of experimenting, but massive statewide systems seem unlikely.

Indeed, marrying Election Day with Veteran's Day and making it a formal Tuesday holiday would cost nothing and would probably improve the system more than most computer-based ideas would.

So for election commissions see what new technologies can be used to more quickly and accurately check voter registrations and tabulate votes. Surely the punch card just got to go. But don't be surprised if in 2012, you're still using the same old polling place and voting on a familiar paper-based ballot. ▶

READERS' LETTERS

Ignore Stereotypes By Hiring Individuals

I READ David Foote's column about the relationship between hiring names and hiring IT professionals with great interest ["Staffing Problem? Learn From the Nanny Dilemma," News Opinion, Dec. 11]. I was born in India, grew up in the U.S. and currently work in an IT environment with a diverse group, consisting of all these people, regardless of age, national origin, visa status, English proficiency, etc. share key qualities that make them successful and valuable to the organization:
• The desire and ability to learn new technologies and adapt to changing organizational needs.
• The desire and ability to work with others in a professional manner, without biases.
• A willingness to reach out and understand other people well enough to communicate effectively with them.
• An ability to be organized and take responsibility.

In a culture of authority for IT work, variability within a particular group is generally greater than variability between

groups. Employers need to remember the importance of the individual when making hiring decisions, rather than making assumptions based on group characteristics. That's the hiring philosophy that really matters, whether you are hiring somebody to care for your children or your IT infrastructure.

Saurav Banerjee
Systems validation consultant
AstraZeneca Pharmaceuticals
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AFTER reading the "Dabbling at Diversity" article by Kathleen Melymuka [Business, Dec. 11], I found myself rather disturbed by the comments made by Ruben Barrales. He reinforces the stereotype that African-Americans and Latinos aren't up to par when it comes to technical sub-

jects after being 'tracked out of science and math as early as elementary school."

Barrales does a disservice to those who remained interested and excelled in the sciences to the point of making IT their career. Because of wide belief in the validity of his statement, these individuals find themselves having to prove themselves much more than others.

J. Simon
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Pity Hormel for Spam

I LOVED the irony that shouted at me from your Nov. 27 article ["Online Marketers Stung by Spam Label" [News]. It seems that some folks forget that spam is a trademark that cannot be

just to the handful of big blue clients who get dedicated, personal care — Technology is supposed to make this easy and scalable.

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Technology Should Ease Serving Customers

THE ROUNDTABLE on electronic CRM tools was fascinating ["Coddling the Customer," Business, Dec. 11]. It amazes me that in this day and age most companies still struggle to give their best prospects truly tailored, personal service, across the board and not

an image of being bit in the side of the head by a slug of flying meat from a square can marketed by Hormel Foods — in other words, unwanted e-mail. The poor online marketers. What about poor old Hormel?

Richard Parte
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RFD & Associates Inc.
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Dell Should Diversify

IT WILL be good for Dell to diversify into all the areas Don Tennant outlined, but this won't protect Dell from the "whimsical financial market" ["Dell to Shift Away From Desktops as Wall Street Punishes PC Makers," Computerworld.com, Dec. 11]. Several companies that play in all of these areas have been punished lately.

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DAN GILLMOR

Bush May Walk Tightrope on Top IT Issues

W HEN GEORGE W. BUSH takes the oath as the nation's 43rd president on Jan. 20, he'll bathe in applause from some of the technology industry's top bosses. But as he tries to tie all things to all people, he runs some major risks of annoying everyone.

Let's look at just two of the major IT-related issues — data privacy and Internet taxation — that Bush and his administration will have to tackle sooner or later. I'm anticipating later, for reasons you'll see. Bush's positions on both topics during the campaign were somewhat fuzzy. He endorsed a continued moratorium on Internet taxes, but expressed some concern about the potential for undermining state and local tax bases. He noted Americans' increasing worries about privacy but didn't propose any concrete actions. Neither matter is going to be easy to solve because different parts of Bush's constituency are in vehement opposition on each point.

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The issue of Internet taxation — whether to levy sales taxes on goods sold online — pits the tech industry's barons, most of whom adamantly oppose Net taxes, against an old-fashioned Republican line of support: Main Street businesses. The tech bosses don't want to do anything to make their own lives more difficult, but Main Street stores are losing sales to Internet companies.

This has led at least one Republican governor, Mike Leavitt of Utah, to insist that e-commerce should be just as taxable as nonvirtual commerce. There's bipartisan recognition on Capitol Hill and in the states that the status quo will be untenable in the long run.

Lip Service Not Enough

While the economy was roaring along the past few years, the debate didn't catch fire because state and local tax collections were holding up well. A good economy disguised the erosion caused by Internet sales.

But if we're heading into a recession, as some believe, the unfair advantage of the Internet businesses will hit home in a more direct way, as governments that rely on sales taxes feel the revenue pinch. As a president, Bush knew about the problem. As president, he'll have to deal with it more directly, because this is an issue that demands a federal response.

The privacy question brings just as many conflicts. During the campaign, Bush sensed the growing public angst and talked about how he understands the need for privacy of financial, medical and other records. Many people took that to mean he favors tough legislation, though I've seen no sign that he went so far as to actually endorse anything of the kind. If he does, he'll run up against corporate America, including the technology industry.

With few exceptions, companies insist that self-regulation is the answer. Self-regulation, of course, is really no regulation at all. Companies don't want restrictions on their rights to traffic valuable information about their customers. Some kind of federal intervention seems critical, but whether Bush will have the stomach to say no to some of his primary backers remains to be seen.

To be fair, the Clinton administration shirked its duty on these difficult issues, dodging both. But they'll be coming to a head soon enough, and Bush will have to deal with them. Vague smiles and promises of bipartisanship won't cut it. ▪

MICHAEL GARTENBERG

How to Apply Skepticism for IT Predictions

T HIS IS MY FAVORITE time of year. It's not the holidays or the good cheer that come with the season. For me, it's the time of year when every journalist, pundit, analyst and anyone else with an opinion publishes a list of predictions for the new year.

We've heard before of the Year of the LAN, the Year of the Network Computer and the Year of the Internet. While all these events actually occurred at some points, they never occurred in the years for which they were forecast. This year, we'll hear about the Year of Wireless or perhaps another prediction of the PC's demise. Again, the pundits will mostly be wrong.

So, rather than yield to the temptation of creating my own list, I'm going to explain why folks are consistently wrong and how you can test the validity of experts' predictions.

Imagine that you're standing in Kitty Hawk, N.C., in 1903. After many attempts, Orville and Wilbur Wright have finally succeeded in making

the first manned flight. While their time aloft is short, their actions will change the course of history; it will change the way business is conducted. It will change human behavior into the 21st century.

Now, imagine that at the end of that historic flight, you were to go to Orville and Wilbur, clearly the aviation experts of their day, and ask their opinion of frequent-flier programs.

MICHAEL GARTENBERG, former vice president and research area director at Gartner Group Inc., is a partner at Hudson Venture Partners L.P. a New York-based venture capital firm. Contact him at mgartenberg@hudsonpt.com.

The problem with predicting the future is the nature of the method used. Most analysts and pundits who are good at what they do have excellent pattern-recognition skills.

The ability to observe early on the repetition of established rules of behavior — or what has already occurred — gives a good analyst an edge.

For example, want to impress your friends and family with the date the next upgrade of Windows will ship? That's easy. Take the beta release date and add at least one year. It's a pattern that has held true for every release, including Windows 2000.

Don't Predict the Future - Invent It

But most technologies don't fit established patterns, and most pundits refuse to acknowledge that they don't have a crystal ball. So here are some guidelines to help you test the many predictions forecast:

1. Any vendor can ship $50,000 of anything. Anytime a new product is introduced, you can always find someone willing to buy it, as well as an analyst who will project a trillion-dollar market for it. A good rule of thumb is to ask: "Would I spend my own money on this?" If the answer is no, it's likely no one else would either.

2. What's the "visible differentiation"? The next time you hear about a product that's touted as a "Windows killer," take a good look. Can you see a visible — and positive — differentiation and tangible benefit for end users, OEMs and independent software? If you can't, buy Microsoft stock.

3. Best of breed doesn't ensure victory in the marketplace. In fact, if history is a guide, it almost always guarantees the opposite. Take the VHS and Beta, Mac OS and Windows. Rooting for best of breed is a great ideal, but it's not the sole criterion for success.

Technology doesn't move at clear right angles. Rather, it twists and turns at dizzying speeds and creates new market opportunities and venues for success as quickly as it closes others.

So, how do you predict the future? How do you seize the opportunity to create the Next Big Thing and retire before My! My favorite visionary, Alan Kay, said it best: "The best way to predict the future is to invent it." ▪

BUSINESS

DIGGING UP DIRT ON DOT-COMS

In today's hot labor market, there are few, if any, topics that are off-limits for job candidates to bring up while interviewing at dot-coms. In fact, says author Daniel S. Rippy, they should be as probing as possible before signing on to a technology start-up. ▶ 29

MESSY EXCHANGE

Commerce One and Oracle have finally come to terms concerning their roles in the Big Three automakers' Covisint exchange. But the arduous process of reaching that agreement illustrates just how complex and messy such massive operations can become and how easily marketplaces can fail. ▶ 30

FACE THE MUSIC

It looks as though MP3.com's legal woes will press on into the new year. Late last month, EMusic.com, an online music provider, filed suit against MP3, alleging that the company is infringing on its copyrights. ▶ 31

ARTS AND SCIENCES

Barbara Null has found a way to strike the perfect balance in her job at Hallmark. As a manager of the card company's desktop publishing systems, Null gets to put her technology expertise to work, but she also gets to flex her creative muscles by working with artists, designers and editors. ▶ 29

THE RIGHT PRICE

Consultants who can master Web-enabled customer relationship management projects and supply-chain management systems are in high demand this year. And those with the right experience are jacking up their rates, while those without it are cutting deals for training and experience in those areas. ▶ 38

BIG MAN ON CAMPUS

In the early 1990s, Valley City State University, a small North Dakota college, set out to differentiate itself from its larger competitors. It decided to become a pioneer in the instructional use of technology. Today, it's one of the most wired colleges in the U.S., and its graduates are landing top IT jobs. ▶ 40

START-UP SURVIVAL

When Kozmo.com first started delivering convenience store products to city dwellers in 1997, it was flying high. Now, it seems poised for a crash landing. But, say company officials, Kozmo's recent woes are perfectly normal for a new business, and they're convinced it will weather the storm. But not everybody is as enthusiastic. ▶ 42

BILL GODFREY of Dow Jones says cash will carry more weight than stock options among job applicants this year.

THE HIRING RACE IS ON

THE TALENT DROUGHT seems to be easing up as dot-commers start heading back to traditional companies. Now, the challenge for employers is to lure the prize workers before the competition gets to them. Many firms are willing to go to great lengths to succeed.

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AT THESE
PRICES, *WHO'S*
THE PER*F*ECT
*H*OST?

D&LL

PowerEdge
2450

Decoding Dot-coms

WHO IS HE?

In his new book, *Sizing Up a Start-up: Decoding the New Frontier of Career Opportunities*, author **Daniel S. Rippy** tells IT pros how they can evaluate a job at a start-up. He also discusses the early warning signs or success signals of a start-up.

Thinking about jumping ship and signing up with a technology start-up, despite the so-called market correction? You might want to first pick up a copy of Daniel S. Rippy's book, Sizing Up a Start-up: Decoding the New Frontier of Career Opportunities (Perseus Publishing, 2000).

In the book, the first-time author and former start-up veteran gives IT professionals a one-of-a-kind road map for evaluating the potential risks and rewards of working at a technology start-up.

As Rippy points out, the success or failure of a technology start-up isn't totally unpredictable. He offers numerous processes and insights that IT professionals can use to evaluate a potential employer's ownership, and the long-term potential and risk.

Rippy, who lives in Dallas, spoke with **Holly Hubbard Preston** about what IT employees should consider when joining a start-up. Rippy is director of mergers and acquisitions and business planning at Cellstar Corp., a wireless distribution company in Carrollton, Texas. In this role, he assesses business opportunities, many that may involve partnering with start-ups.

What is the single biggest misperception that IT job searchers generally have about taking a position at a technology start-up? That one's success is fairly assured at a technology start-up, and that there really isn't all that much risk.

In your book, you write that 90% of all technology start-ups fail. What do you think are the overriding factors for failure? Hiring the wrong people for key roles, and management underestimating the competition, as well as the time and resources required by the company to bring a product or service to market.

What criteria do you recommend that IT job searchers use to evaluate a technology start-up prior to taking a job? Quality of the management team; business plan and business model; board of directors — for example, the people affiliated with the venture capital firms funding the start-up. The job seeker also has to have an understanding of the particular role and responsibility he or she takes on . . . specifically, what experience they will get from the opportunity and what they will be able to do with it even if the start-up doesn't succeed.

How probing can or should a job seeker be in an interview with the management of a start-up? Given how hot today's job market is, there are few questions you could ask that would be offensive. The interview more so than ever before is a two-way process. Job seekers are within their rights to ask for a copy of the business plan, though they should be prepared to sign a confidentiality agreement.

They should absolutely ask about the sort of funding the firm has received to date and who sits on its board of directors. The management team should be asked about the individual track records of its members, what they have learned from their successes and failures. "Why will you win?" and "What keeps you up at night?" are also very relevant questions.

It is reasonable to probe into technology development plans for, say, the next 30 to 90 days and beyond; any risks there might be to that plan. Management should be able to talk very competently about that.

What are the major career risks a person will have to weigh prior to joining a technology start-up? You might join a company and find yourself out of a job within three to six months, and you will need to explain what happened and why. It does not have to be a setback, but you have to be prepared with a story of what went on and why you didn't see the failure coming.

If you can explain that decision after the fact, that could be potential knowledge to a future employer. If you end up at successions of failed start-ups and have to defend that track record, a prospective employer may question whether you have good judgement.

What are the primary points to consider when negotiating a job offer with a start-up? Salary, standard benefits package and possibly an equity stake. These are nontraditional benefits to consider, such as days off or a [Digital Subscriber Line] to the home . . . benefits can involve an aspect of creative control at the office.

How much negotiating room should you expect with a start-up? Do you go in

there assuming this is a cash-strapped management team that has little more than options to offer? I have seen people get paid a lot more than they would in certain corporate settings. I have also seen people take a 50% cut in pay to join a start-up.

You absolutely need to find out what the pressure points are.

Signing bonuses are increasingly common because companies are so desperate for talent but don't want the recurring debt of high salary. Especially for IT people, there is a lot of flexibility that can be discussed in terms of development milestones tied to performance bonuses.

How much change in job description should a person expect to experience in his tenure at a technology start-up? It is perfectly reasonable to have a discussion about career path and promotion. But to expect that you will come in as a product manager and end up heading a division is probably unrealistic because people are hired for specific slots. Besides, when a company doesn't meet growth plans, it is hard to promote people. Make sure that the role that you are entering at is one that you are excited about.

What is the average job tenure for a person who takes a job at a technology start-up? Based on experiences of people I have talked to, it is probably 18 to 24 months.

Often, people will move on to a series of start-ups . . . They get hooked on that way of life.

Hubbard Preston is a freelance writer in St. Helena, Calif.

BUSINESS

Covisint Technology Partners Sign Equity Agreements

BY LEE COPELAND

It took two months of wrangling and seven teams of lawyers to sort out the complex equity structure at Covisint LLC, according to company officials. The bickering among the exchange's backers underscores the challenge of putting such a massive operation under way, analysts said.

"The verdict is not out yet on online marketplaces. Which ones will succeed and when is still up in the air," said Dan Garretson, an analyst at Forrester Research Inc. in Cambridge, Mass.

The procurement exchange, launched last year by the Big Three automakers, recently signed an equity agreement in which Covisint's two lead technology partners, Commerce One Inc. and Oracle Corp., will hold equal minority shares in the Southfield, Mich.-based start-up but different stakes in its revenue model.

Competing Claims

On Dec. 12, Commerce One announced that it was the lead player in Covisint. The exchange will use the Pleasanton, Calif.-based vendor's Market-Site software to process transactions, conduct online auctions and manage catalog content.

Oracle disputed that claim the next day, contending that its technology forms the hub that applications like Commerce One's software plug into. Covisint will use Oracle's enterprise resource planning applications to run its internal operations and Oracle's Exchange Marketplace to provide security, single sign-on and registration capabilities.

Covisint officials said neither Commerce One nor Oracle holds a lead position over the other as a supplier.

General Motors Corp. brought Commerce One into Covisint, while Ford Motor Co. steered Oracle into the exchange. The two automakers originally sought to build competing procurement marketplaces but decided to scrap those plans last February. Instead, they combined their efforts along with German automaker DaimlerChrysler AG.

The exchange has channeled about $1.5 billion in procurements since October. The U.S. Federal Trade Commission and

a German antitrust agency delayed Covisint from operating sooner pending antitrust probes. Covisint's five backers, which include Japan-based Nissan Motor Co. and France-based Renault SA, said they hope to channel more than $300 billion in annual transactions through the exchange.

But Oracle and Commerce One differ in how they'll par-

take in the exchange's revenue stream. Oracle will receive a lump sum payment from Covisint for the licensing of more than 55 of its products. Mark Salser, senior vice president of

BUSINESS

EMusic Sues MP3.com Over Copyrights

BY JAMES EVANS

EMusic.com Inc., an online music provider, late last month filed a copyright infringement lawsuit against MP3.com Inc. in District Court for the Southern District of New York, alleges that MP3.com is infringing on the copyright of some albums for which EMusic.com owns the digital rights.

EMusic.com in Redwood City, Calif., filed the complaint with six of its partner labels: Fearless Records, Fuel 2000 Records, Gig Records LLC, Invisible Records, SpinArt Records and Victory Records. A spokesman for EMusic.com said the company had no comment.

MP3.com has faced a number of copyright infringement suits during the past year. The Recording Industry Association targeted the company because of its My.MP3.com service, which, in its initial configuration, allowed users to listen to their CDs from any computer with an Internet connection.

Warner Brothers Music Group Inc., EMI Group PLC, BMG Entertainment and Sony Music Entertainment Inc. settled their lawsuits for an estimated $20 million each.

Universal Music Group in New York continued its legal action, and on Sept. 6 a judge found MP3.com guilty of "willfully infringing" upon Universal's copyrights. MP3.com agreed to pay $53.4 million to Universal in mid-November.

My.MP3.com had been suspended since April because of the pending lawsuits. Two weeks ago, My.MP3.com began running again as a subscription-based music service. ❚

Evans is a reporter at the IDG News Service's Boston bureau.

Covisint

advance technology at Oracle, said the firm would record the "large" licensing revenue in its third quarter, but he refused to reveal the size of the payment.

In contrast, Commerce One will take a share of Covisint's transaction-fee-based revenue. It's the only technology partner to receive such a deal.

Dearborn, Mich.-based Ford and Detroit-based GM also bought 14.6 million shares each in Commerce One, worth a combined total of $1.26 billion.

Kevin Prouty, an analyst at AMR Research Inc. in Boston, said it will take two to four years before Covisint begins generating profits relative to its capital and technology investments.

"Oracle is taking the short-term view of generating revenue right away," said Prouty. "Commerce One is taking a high-risk, high-gain approach and the longer-term investment." ❚

IT Agenda
2001

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Contents

[EDITOR'S NOTE]

NOVEMBER'S ELECTION DEBACLE got me thinking. Sure, folks were divided about which candidate should lead the country, but from the uncertainty and confusion came a simple truth: Everyone agrees that we should, in fact, have a president. Same thing for IT. You might not agree with your colleagues about which tasks should be on your agenda for 2001, but you're quite sure you should have an agenda. A to-do list, a watch list, a laundry list – whatever you call it, you need a blueprint for the year.

In the following pages, that's what you'll find – 10 action items we feel should be on your list for 2001, presented as stories sprinkled liberally with advice on how to get made. This issue is a useful as a Web content strategy. Other IT managers say you're planning a wireless or Web content strategy. Other IT managers advice you to start small. Learn lessons from small-scale wireless trials and establish reliable online customer service before expanding your Web effort.

Is this the year you'll get a handle on your clickstream data or plan your business-to-business integration? You'll need to put together a cross-enter-

prise team for both tasks. Join with your marketing department to get the best use from your customer data, and appoint a full-time team to develop, deploy and maintain a business-to-business infrastructure. And whether you're revamping your data center for the Web or migrating to Windows 2000, you'll need to prioritize your applications according to how critical they are to your business.

The need to be in recruitment mode all the time is another major theme in our stories. In 2001, you'll need a security expert to thwart break-ins, a privacy expert to keep an eye on legislation in Washington and a local culture expert to deliver appropriate content for your global Web initiatives.

Maybe the most important advice of all is to get involved: Weigh in on the development of security standards and the online tax question. Help shape privacy legislation.

And one more thing: You need an agenda for the new year, so why not plan it now?

– Ellen Fanning

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IT's AGENDA FOR 2001:
Don't Forget Your Compass

BY KEVIN FOGARTY

Kevin Fogarty

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IT's AGENDA FOR 2001:
Don't Forget Your Compass

BY KEVIN FOGARTY

[OPINION]

LAST AUGUST, an amateur sailor named Eric Abbott was arrested by the British coast guard after running his homemade boat aground off the coast of Wales. According to a Reuters report, it was the 11th time they'd had to rescue the unemployed painter, who, at one point, had tried to navigate across the Irish Sea using a road map.

Yep. A road map. Plenty of information on roads and everything to get you to the sea, but nothing on the currents, shoals and other hazards you find once you actually get on the sea.

That's roughly the situation most IT managers find themselves in during major technology projects — which are often driven forward by eager users and unctuous vendors who then leave the actual implementation in the hands of IT people who have no idea what the real problems will be.

They flat go down to the sea in ships, after all, sometimes don't come back.

The IT seas are going to be choppy this year, with big changes coming, sometimes from traditional IT vendors but just as often from makers of gadgets for consumers. So, what will change in your enterprise in 2001?

Will wireless technology finally turn into something useful, or is it strictly a toy for execs? Wireless can really have serious operational benefits. But even for the feet-in-the-street businesses like utilities and delivery companies, for whom the payoff in efficiency of field workers is most obvious, the implementation can be long, difficult and expensive.

The need to increase bandwidth and make network connections more flexible may also drive more users to overhaul their network infrastructures with optical switching and satellite links.

More scary are less-esoteric upgrades like Windows 2000 or Win 2k Datacenter, both of which users approach with caution. Even now, nearly a year after Win 2k shipped, early adopters advise newbies to go a slow, careful course. But caution isn't easy to sell in a do-it-now, e-commerce-obsessed environment.

E-commerce customers are demanding that you know who they are when they hit your site and that you give them exactly what they want: speed and fast service. But they also want to protect their privacy, so they don't want you to actually use that information. Ugh.

This year, clickstream data analysis will turn many IT people into market researchers. But to make that work, they have to connect Web site analysis closely to the old-style data centers that serve the rest of the customer service function. That requires not only technical and political savvy, but also a sense of adventure. (Take an old-school data center manager and a 23-year-old webmaster to lunch sometime and let them talk integration. It's like watching the *Jerry Springer Show*.)

The redundancy, reliability, backups and other processes built over the years to keep the critical applications up 99.99% of the time can't go away, but they have to talk over IP, run on networks that are reconfigured rapidly — or outsourced — and be scalable enough that you don't get swamped if your site succeeds. Add to that the headache of negotiating with both suppliers and competitors to create XML lexicons and other standards that let you build workable business-to-business connections, the continuation of a skills crunch that's driving up IT salaries for the people you can find, and, well, "ugh" again.

There's good news, too. XML standards actually are being developed, enterprise applications tools that help connect the back end to the front end have made enormous progress, and some parts of the picture are getting simpler. And it's not always the hottest Web sites that are the most successful. Sometimes, simplicity of design, if not the technology behind the interface) does pay off.

A year ago, the dot-coms were kings of the hill. They had all the money; they set the agenda; and it was their standards to which everyone else was beld, even if they themselves didn't meet those standards.

Now, reality has set in. The business picture is clearer and more restrained. Good businesses with good systems are figuring out how to adapt to the Web. Start-ups are figuring out how to build the infrastructure and reliability they need to succeed. The e-commerce path hasn't yet been mapped, but many of the goals have been defined.

No IT organization has to be all things to all people. No Web site has to deliver every feature the technology enables.

Smart companies are looking at a host of options and actually taking the time to figure out which ones make sense. And the chaos that is the computer business provides the opportunity and the tools for them to do that.

Oh, and Eric Abbott? He agreed to take navigation lessons, but he still believes he can get where he's going without necessarily knowing where he is. Even when the way is as uncharted as the tech world is these days, that boat don't float. ✦

Marianne Gürten, CIO of General Motors Europe in Maidenhead, England

LEARN **THE POLITICS**
OF
Going
Global

BY STEVE ALEXANDER

S YOUR COMPANY GOING GLOBAL? Don't
be fooled. Pursuing a global strategy
means more for IT than creating a
worldwide network infrastructure, set-
ting up foreign distribution or hiring
IT talent abroad.

Whether the international presence is
online or involves setting up operations in oth-
er countries, without some research into the
customs, delivery costs and employment laws
in other nations, global expansion could spell
global disaster.

In 2001, going global will require that you
think about your department's international
role in new ways. For example: How will the
content of your Web page be interpreted in
various countries? Will the variable costs of
international shipping sink your supply-chain
management software? Will you be able to
hire scarce IT talent or change work proce-

dures without running afoul of laws in other countries?

While it's difficult to answer these questions before rolling out a global IT plan, waiting until afterward could be catastrophic. The rules aren't always clear, so we asked some IT experts for advice on what to consider before venturing into international markets.

Avoid Personnel Pitfalls

Maryann Goebel, CIO at General Motors Europe in Maidenhead, England, discovered that IT personnel issues abroad bear strong similarities to those in the U.S., but with some important differences.

Goebel has been in Europe for two years. Prior to that, she was based in the U.S. as CIO of GM's Truck Group in Pontiac, Mich. She now has 13 direct reports, but there are approximately 300 GM IT employees in Europe and thousands of contractors and suppliers.

In Europe, much like in the U.S., IT talent is in high demand, so it's important to plan ahead. "Employers in Europe generally have employment contracts with their companies, and these contracts usually stipulate how much time the employee must stay on once he or she gives notice. The standard notice period is two to three months," Goebel says.

"In my experience, the amount of time the employee must stay on is negotiable," she says. "But I've been in a range of situations. In one case, the employer was willing to let the employee move on in two weeks. In another case, the employer had to fulfill the full term of the contract after giving notice, because the employee was in the middle of a project."

Those restrictions can affect the time it takes some companies to fill IT vacancies. But the employment contract requirement can work in the employer's favor in that it provides time to hire a replacement when an employer decides to leave.

And the contract market in the U.K. offers a good supply of qualified IT talent that can be used to fill gaps in staffing, assist in short-term projects or provide specific skills.

"If you find that it's taking more time to hire people than you anticipated — for example, you're waiting for someone to come to work once you find them — then a viable option is to hire a contractor," Goebel says.

One other difference: Compared with the U.S., it's much more common for European IT workers to be members of unions. Therefore,

Checklist

- Research legal employment laws that could affect your company's hiring plans abroad.
- Use Web software that determines delivery costs and export-regulation compliance for individual countries.
- Customize Web content where possible to avoid conflict with local customs and attitudes.
- Improve Web marketing by tailoring e-commerce content to local holidays and events.

employment represents a partnership of the employee, the employer and the union that represents the employees.

"In these cases, for example, all members of the employment partnership are informed and consulted regarding major organizational changes, so that the best overall solution is implemented," Goebel says.

Think Like a Local

International marketing can result in problems if your Web content is misinterpreted, says Larry Clopp, an international trade analyst at Gartner Group Inc. in Stamford, Conn.

Clopp recalls the story of a car manufacturer in Mexico. "Its Web page showed a picture of a hiker standing next to a car. But in Mexico, hikers are poor people who can't afford cars, so it wasn't acceptable to show someone who wanted to be a hiker," he says.

"You need a separate cultural focus for your Web site in some countries," Clopp says. "A few Web sites do a good job of this by hiring country content managers who manage the content locally and make sure the Web presence is effective in that country."

You should also consider further segmenting local content to address different language groups. "How else can you manage your Web content in India, where you've got more than 20 spoken languages?" Clopp says.

Of course, it's impossible for IT departments to anticipate all of the potential cultural mistakes. So it's important to accept that there are risks, think hard about what you're hoping to achieve and know you can't avoid all problems.

"Given the vast differences in economics and culture around the globe, it's going to be

LEARN THE POLITICS OF Going Global

difficult to hit it just right in all cases," says Stewart Morick, the Americas' leader for e-business in the consulting practice of PricewaterhouseCoopers in Baltimore. "To do so, you might have to redo your product branding in every country, which isn't practical. So there's got to be balance" between cultural sensitivity and marketing needs.

Some cultural mistakes are inevitable because of the speed at which IT departments must move to roll out global marketing tools. Morick says. "In today's world, IT people have to move a lot faster. It's not like implementing an ERP system in two years. Global Web marketing software is being delivered in 90 to 180 days," he says. "So you may offend some people just because of the speed at which you work and the fact that lots of people around the world will use your software."

Clopp says many IT departments and companies will find out soon whether they've violated any cultural taboos. In 2001, as more U.S. companies begin doing business-to-consumer and business-to-business e-commerce in Europe, it will become apparent which Web features transcend national cultures and which ones don't, he says. So learn how to avoid some of these pitfalls from the pioneers who have gone before you.

Test Your Supply Chain

Beyond matters of cultural taste, there are supply-chain issues to consider in global expansion. You need to determine ahead of time whether e-commerce could really handle your international transactions.

"We suggest companies look at such supply-chain issues as their ability to deliver goods or make financial refunds" based on Web site purchases, Clopp says.

For example, U.S. goods being returned to the U.S. would be free of any duties that must be paid on some foreign goods. But special documents are required if a U.S. company is accepting the return of goods that were manufactured in another country but sold via the Web page of a U.S. corporation.

It's important to understand the real cost of shipping of goods ordered via the Web worldwide. Sometimes, local delivery expenses make the purchase of products through a Web page too costly for the buyer, which raises the question of whether the e-commerce site should have sold the product in that country in the first place, Clopp says.

"It's the issue of total delivered cost — what will the customer actually pay?" says Clopp. He cites a recent example involving a U.S.-based company: "A customer in Brazil bought a $20 CD, but when the CD got to Brazil, the total delivered cost to the customer was $160

due to transportation, customs, customs [fees] and taxes," Clopp says. "If you are running a Web-based exchange, marketplace or auction, you will need software that calculates the total delivered cost for every country."

Companies selling goods on which there are export restrictions, such as high-performance computer equipment, will need software that makes sure a purchased item can be sent to the country from which it was ordered.

Today, most companies that operate e-commerce sites don't have the software required to calculate total delivered cost or ensure compliance with export restrictions, Clopp says. As a result, they're often forced to decline international orders, which in some cases account for more than half of all orders placed via a Web site. That creates two problems: Companies lose sales and run the risk of alienating potential customers.

"If a customer places an order, then gets a reply two or three days later that you don't support commerce to that country, that doesn't make you any friends at all," Clopp says.

You also have to be aware of each country's tax laws that can affect e-commerce.

"Tax laws vary and are changing. Some countries now want a tariff or tax on Internet sales. And because information is now being considered a product in some countries, the question that's being raised is whether or not you can tax information," Morick says.

But while there are many pitfalls for IT to avoid in international markets, there also are opportunities that are often overlooked. Make sure you personalize your Web page content for local audiences. While this may require extra work, few companies are trying it, so the payoffs could be huge. For example, brick-and-mortar retailers usually do a good job of attracting buyers by offering sales based on local special events; online retailers could do the same if IT segments the e-commerce presentation by country, Clopp says.

"Internet companies could pay more attention to big international special events, such as the Olympics, and to other local events, such as national holidays," Clopp says.

"There is a lot of marketing in brick-and-mortar stores for All Saint's Day in Mexico and Bastille Day in France. You don't find that on the Internet today, but I think you're going to see a lot more events-based marketing in international e-commerce," he says. "Companies are going to be able to keep track of holidays and promotions in the local retail market and offer the same marketing message and promotions on their international Web sites as the brick-and-mortar stores do."

There's much to learn from the experience of IT departments that have ventured into global marketing, but Morick warns IT people not to blindly copy what others have done.

"Just because somebody else is doing it doesn't mean you need to. The things you do must be economically and culturally right, and they must be aligned with your company's strategy," Morick says. "There is more to it than just putting technology in place." ◆

Alexander is a freelance writer in Edina, Minn.

> Employees in Europe generally have employment contracts with their companies, and these contracts usually stipulate how much time the employee must stay on once he or she gives notice. The standard notice period is two to three months.
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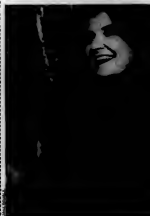
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BY PATRICK THIBODEAU

ONCE UPON A TIME, IT managers could be content to be experts on servers, operating systems and networks. But not anymore. Now, add public policy to the list.

The trend is toward more regulation that affects technology. And IT managers say they "...are no choice but to examine how to keep the government out of their companies' systems.

"Any company that is becoming involved with the Internet has to keep abreast of what the feds and the state governments are doing," says Ken Cohn, CIO at Potomac Electric Power Co. (Pepco) in Washington.

Regulation can affect how a firm stores and shares data, and staying up-to-date is "part of the job nowadays," says Jerry Rode, IT director at Saab Cars USA Inc. in Norcross, Ga.

There are three major regulatory issues that should be on your radar screen this year: privacy, taxation and security. Privacy concerns are prompting regulatory action in Congress, and a further tightening of controls is expected in Europe. As for taxes, governments worldwide are searching for ways to ensure that e-commerce transactions won't undermine sales tax collections (U.S.) and value-added taxes (Europe). Businesses are also seeing a government demand for improved data security as a matter of privacy and national security.

"I think we're going to see more government regulation, both on the federal and state levels," says Cohn.

The specter of more regulation makes improved interaction between the CIO and other business units an imperative. For instance, this past summer, Pepco created a security committee led by its general manager of internal audit. Its members include the CIO and representatives from legal and government affairs. The committee is working to ensure that physical assets and cyberassets are protected from intrusion and that all of the company's key departments are kept informed of government regulatory and legislative activities, says Cohn.

Companies must ensure that they have mechanisms in place for sharing information, says Robert Rothman, director of legal affairs at e-GM, the e-commerce division of General Motors Corp. in Detroit. Rothman is part of that division's management board, whose members include the CIO as well as representatives from the company's other major business units. All of these managers discuss government regulation issues, he says.

Decisions are made with input from all parts of a company today, says Rothman. "It would be foolish to try to silo that stuff — that doesn't work," he says.

Help Shape Regulation

The key is to get involved; don't just wait for regulation to arrive.

Many Fortune 1,000 companies have government affairs offices to lobby, monitor and report on regulatory trends. But as an IT
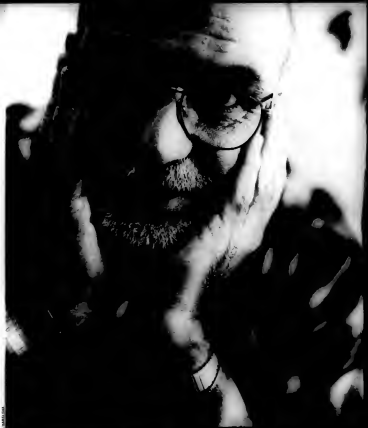
Pepco's Ken Cohn: "I think we're going to see more government regulation, both on the federal and state level..."

KEEP **THE GOVERNMENT**
Off You
Back

manager, you also have the power to directly influence the outcome of legislative and regulatory issues.

Peter Browne, who heads information security at Charlotte, N.C.-based First Union Corp., is among those in IT who take an active role in shaping regulation.

You have to be proactive and interactive with government bodies on issues that affect your systems, Browne says. He does so, in part, by making sure he responds in writing to requests for comment from government agencies on regulatory proposals, such as the information security regulations for financial institutions that are being developed by the Office of Comptroller of the Currency, the Federal Reserve and other regulatory agencies.

And get involved with others that share similar concerns — there's strength in numbers. CIOs should network on government issues and attend industry meetings.

"It's really going to be tough if everybody tries to go it alone. I just don't think that's going to work," says Ronald Plesser, a Washington attorney who represents several companies on privacy issues.

Keep an Eye on Washington

Most experts say they believe that Congress will almost certainly pass some kind of comprehensive privacy legislation in 2001 that will affect e-commerce. But almost any legislation, no matter how broadly written, could have a very detailed impact on a company's systems, so it's important to stay in the loop.

For instance, when Congress approved the Gramm-Leach-Bliley Act in 1999, the landmark financial-modernization measure included a provision on consumer privacy and the security of consumer information. The language in the legislation was very general, but it led to a lengthy and complex series of proposed rules written by federal regulators that may affect financial services in very specific ways.

The proposed rules would require safeguards such as permission testing by an independent third party or internal independent party, encryption of data and increased responsibility for an outsourcer's data security practices.

The health industry is facing similar regulatory controls through the Health Insurance Portability and Accountability Act, passed by Congress in 1996, which also mandates data security protections. As part of that ongoing regulatory effort, the U.S. Department of Health and Human Services recently unveiled standard formats for processing claims and conducting other administrative tasks electronically.

"We're starting to see regulatory interest" in security issues, says Robert Miller, deputy director of the federal U.S. Critical Infrastructure Assurance Office in Washington, which has been working to increase national security through improved data protection in government and in the private sector.

"This is hardly coordinated government regulation; this is not being done by the admin-

istration, but I think it's a harbinger of where informed opinion is coming out on this," says Miller.

Run a Textbook Network

Privacy abuses and more security breaches at companies could also spur government regulation and legislation. Congress has expressed enormous interest in these areas and holds hearings on the latest headlines, such as this past year's massive distributed denial-of-service attacks. Congress has been critical of companies that either publish convoluted online privacy policies or don't post their policies at all, so make sure your policy is posted and to the point.

A good defense is to "be on your best behavior and essentially run a textbook network," says Karl Dubendorf, an information risk expert at KPMG LLP in New York. "What I think that sends [is a message] that we're responsible" and that IT doesn't need the government to be "looking over our shoulders to see that we do our job right."

In this regard, industries would be much better off regulating themselves, says Mark Barry, vice president of IT at Chicago-based railroad car provider TTX Co. and president of the Chicago chapter of the Society for Information Management.

"We jealously guard all information about business partners and users because we consider it a competitive advantage, not because the government told us to," says Barry.

But regulation, he says, will be primarily aimed at companies that sell to consumers, where data protection is more of a public issue with lawmakers, and not at business-to-business firms. "I think [business-to-consumer] models are more subject to regulation because consumers want their rights protected and their privacy protected," Barry says.

Join the Tax Debate

You'll also need to weigh in on the online tax question this year. Thirty-seven states are currently at work on plans to simplify taxes through legislative changes and the development of a system for handling sales tax transactions over the Internet. The states might create a third-party intermediary for online tax collection between a business and consumer. As envisioned, such a third party could reduce the administrative burden for businesses by collecting taxes and ensuring that the states get their shares.

Many states rely heavily on sales taxes to fund basic services and see the expansion of online sales as additional revenue for their tax bases, say experts. Businesses will need to consider how debate over this issue may ultimately affect their e-commerce systems.

"The states aren't going to give up on this; it's just too big. So they are going to strive to find a way to get that revenue," says Kent Johnson, a tax expert at KPMG.

"Companies ought to get involved in the process, because they are going to have to live with the result," he says. "If they are involved in the process, they can at least have a say in fashioning it." ✦

Checklist

- Stay abreast of government actions. Big-picture legislation can affect systems in complex and specific ways.

- Respond to government requests for comments on regulatory proposals, and network with others in the industry.

- Be good. Lawmakers are on the hunt for examples of privacy abuses and security breaches to illustrate the need for new laws.

We're an equal oppo

knowledge provider We d

where your data comes

PLUMB YOUR Click-Stream Data

BY STEVE ULFELDER

RECENTLY, David Cameron needed to put his young daughter on an airplane. He figured he might as well start building her a cache of frequent-flier miles, so before making the reservation, he says, "I went to the airline's Web site and was able to enroll her [in the frequent-flier program] instantly."

Cameron is vice president of database integration services at Wheelhouse Corp. in Burlington, Mass., which designs Internet marketing infrastructures, so he had a professional interest in what would happen next.

After securing the frequent-flier number, he waited an hour to call the airline's reservation system, assuming that would give the online frequent-flier data enough time to sync up with the reservation system. "I thought an hour was generous," Cameron says. "But the reservation system hadn't even heard of her frequent-flier number." In the end, he says, it took three days for the data sources to be merged.

The story illustrates one of the top challenges facing businesses in 2001: making better use of the customer data captured on a Web site. This "clickstream" data, often described as the footprints visitors leave at a site, has grown wildly — large businesses may gather a terabyte of it every day. But companies' ability to analyze such data hasn't kept pace with their ability to capture it.

Experts say the next frontier of Web data analysis is better integration of clickstream data with other customer information, such

as purchase history and even demographic profiles, to form what's often called a "360-degree view" of a site visitor.

This year, you and your company will face other questions related to clickstream data as well. Who should take the lead on data analysis? Is outsourcing such sensitive data a viable option? And how do you gather and use the data your company needs while maintaining a strong privacy policy, which is growing increasingly important to consumers?

Track Your Visitors' Footprints

Clickstream data shows which pages of a site were visited and in what order, as well as how long the visitor remained at each page.

The data, if used properly, can be a gold mine. The problem, say experts, is that few businesses use clickstream data properly: Companies simply rake in all the raw data they can but have a limited ability to understand what all that information can potentially tell them.

So, what data do you need to track? Perhaps the most common footprints captured are the first ones site visitors leave: When did they enter, and from where did they come? The answer to the latter question, often called the "referral URL," is vital to businesses seeking to figure out where customers come from.

Visitors may have typed in the company Web address manually, but it's more likely that they clicked on a banner advertisement or some other link. If they entered the site via a banner ad, it's handy to know where the ad ran so you can evaluate the effectiveness of various marketing and advertising strategies.

You'll also need to track the duration of each visitor's stay; how many pages the visitor

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Checklist

■ Combine clickstream data with other information, such as a customer's purchase and service history, to maximize its value

■ Consider outsourcing: Let somebody else worry about the sheer quantity of your clickstream data.

■ Make sure your company's marketing executives fully understand your technology's capabilities and limitations

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looked at and in what order; which products were viewed and, if any, were purchased; and where a user ditched the site.

This latter information is critical to retailers, which are constantly vexed by the phenomenon of the abandoned shopping cart. Reports indicate that as many as three quarters of online shoppers who put items in a cart bail out before completing their purchases.

There are many possible reasons for this. Privacy advocates say many shoppers balk when asked for their credit card numbers. But unwieldy or confusing site design also accounts for many of the abandoned carts.

Businesses that ask consumers to fill out forms face bailouts as well. "We're interested in how far someone gets through our appli-

---

cation before they abandon it," says Mark Lawrence, IT director and chief privacy officer at CompuCredit Corp., an Atlanta-based credit card company. "We want to know where they abandoned it and why."

When Hoover's Inc. in Austin, Texas, launched a channel devoted to travel, the online research company was surprised at the new page's worse-than-anticipated performance. When promoting the new channel, "what we thought would work was buttons on the home page," says Craig Lakey, Hoover's vice president of marketing. "We found out they were coming from other areas."

Hoover's used Essentials, an analysis tool from Personify Inc. in San Francisco, to determine that the home-page promotion was being wasted because 80% of the company's traffic entered its site through other pages. Hoover's shifted its travel-channel promotion to other areas of the main site — and more than doubled its travel-page views, Lakey says.

Determine Whose Job It Is

The first critical task in 2001 regarding clickstream data is deciding who should own the process. Some experts believe that marketing, as the primary user of Web-derived customer data, should own the analysis process, but it will likely be your IT department that's charged with collecting that data.

According to a recent report from Jupiter Research Inc. in New York, usage analysis should be performed by those who are most likely to use the information. "While IT resources are certainly necessary," the report says, "the IT group is too far removed from the business goals of usage analysis."

The IT leaders interviewed for this story

PLUMB YOUR
Click Stream Data

paint their clickstream data-analysis function as an equal partnership between marketing and IT. The marketing folks set the vision, deciding where the business needs to go and what information must be gathered and understood in order to get there IT's role is to implement their vision.

For example, Kurt Schlicher, a systems architect in the Internet group at Dodgeville, Wis.-based retailer Lands' End Inc., says his department has customized its copy of Insight, a data collection and analysis tool from Fremont, Calif.-based Accrue Software Inc.

"Basically, we have a number of reports the marketing department uses," Schlicher says. "We've modified [Insight] to understand our cookie formats and page-naming convention."

Decide Whether to Outsource

The two biggest difficulties in effectively analyzing clickstream data, analysts say, are having too much information and not enough people to analyze it. It's no secret that the amount of customer data available from businesses' Web sites continues to increase. These days, "the larger sites pull in several gigabytes a day," says Wheelhouse's Cameron. "Maybe terabytes."

Meanwhile, the Jupiter survey found that 53% of Web businesses had less than one full-time employee devoted to data collection and analysis, and 23% had no one assigned to the job.

It should come as no surprise, then, that outsourcing data collection and analysis is growing popularity. "As sites grow, they're just faced with overwhelming data," says Peter Marino, a Jupiter analyst. "Outsourcing takes that off their plate."

Gathering, never mind analyzing, clickstream data is "Priority 6 or 7 for overworked IT departments], so it never happens," says Usama Fayyad, CEO of digiMine Inc., a Kirkland, Wash.-based company that uses a service-provider model to deliver data warehousing and analysis.

Of course, when you outsource any data-related function — collection, analysis or even storage — you give a third party access to information. And when this information is customer-related, you're playing with fire.

Marino says he's spoken with several financial services companies that have resisted outsourcing their data collection and analysis for just that reason. "It's a big stumbling block," he says, but it can be overcome through careful selection of partners and rigorous application of standard security and analytical practices.

Create a Full Picture

In 2001, leading organizations will seek to do a better job merging clickstream data with information from other sources to form a richer picture of customers. The clickstream is fine, analysts say, but its use is limited if it stands alone. The wave of the future is an integrated data-snapshot of a customer that includes

clickstream data; previous purchases, if any, not only from the Web site but from other channels; the consumer's customer service history; and demographic data.

That 360-degree view of customers and potential customers should be a high priority in the year ahead. Automobile parts retailer JC Whitney Inc. currently uses tools from Portland, Ore.-based WebTrends Corp. to track only high-level customer data such as the make and model of cars, according to Bruno Brunetti, the Chicago-based company's director of Internet development and operations. But JC Whitney is barely using WebTrends' capabilities.

"Next year, Brunetti says, "we're going to try to understand customer behavior more to enhance the user experience." That means collecting more granular clickstream data and combining it with information from other sources.

At Hoover's, the challenge is to evolve the present data-analysis function into "more of a [customer relationship management] platform for a fuller view of the customer," Lakey says. Hoover's plans to use Proactive, a Personify profiling application, to import demographic data on customers and prospects.

Choose Your Privacy Path

Hand-in-glove with the data gathering and analysis problem is the privacy question. This past year, the number of corporate embarrassments caused by inadvertently exposed customer data skyrocketed. It's become such a concern that many businesses have appointed a chief privacy officer to set policy, educate employees and ensure that proposed business deals don't risk privacy breaches.

Arabella Hallawell, a senior analyst at Stamford, Conn.-based Gartner Group Inc., warns that in 2001, "customer information data-sharing is going to be a big problem [for] enterprises," because of the increasing amount of information shared with service providers and because of the "extended relationships in the supply chain."

Experts say you need to make a choice: Do you obey the letter of privacy law, primarily to limit corporate liability? Or do you "take the high road," as Hallawell puts it, and establish tougher policies than required? Regardless of which path you choose, somebody in the business — usually legal counsel, but sometimes a chief privacy officer or CIO — must stay current on the array of privacy-related laws and regulations that are pouring forth from the federal and state legislatures.

It's worth remembering that taking the high road may actually provide a competitive advantage in some businesses, particularly those that are consumer-oriented. "If customers don't trust you," Hallawell says, "they don't want you to know them better." ✦

David Cameron, vice president of database integration services, Wheelhouse Corp.

Ulfelder is a freelance writer in Southboro, Mass. He can be reached at sulfelder@charter.net.

DEVELOP YOUR
Web Content Strategy

BY MICHAEL MEEHAN

A WEB SITE WITH no e-mail capability and no banner ads? At first glance, it might not spark much interest in the business community, but that model has turned into a billion-dollar baby for Southwest Airlines Inc.

In August, the discount carrier became the first airline to crack $1 billion in ticket revenue on its branded Web site. It has done so with perhaps the simplest formula in the trade: The Dallas-based carrier doesn't seek to create new revenue streams or develop new types of business partnerships through its online operation; it sells tickets, keeps things simple and makes money.

"It is a low-cost distribution channel for Southwest," says Melanie Stillings, a marketing automations manager at the airline. "It costs us about $10 to book online. It costs us about $10 to book through a travel agency. What we try to avoid is spending ungodly amounts of money on an Internet product if it's going to the raise the price of our tickets."

Southwest is typical of businesses that will use the Internet in the coming year as a low-cost channel to streamline sales, not just as a reason to launch ad campaigns or a way to build brand recognition. The mandate for IT in 2001? Use the Internet to build a reliable customer base.

Keep It Simple

Southwest began selling tickets online in early 1996, and despite not having an e-mail button on its site, the airline has managed to keep its brick-and-mortar reputation for customer service.

"If people need customer service, we want to do it right," Stillings says. "We want to give them an answer and a live person, not a wall. Airlines are still a people business."

Southwest has also forgone the banner advertisements that are common on many Web pages. Stillings says the company isn't interested in logging down its Web page with peripheral information. Southwest wants the page to load quickly and customers to get the information they want with relative ease, she says.

"We get a lot of comments about [not having] bells and whistles and the latest wireless

![Melanie Stillings, Southwest Airlines]

technology," Stillings says. "Our customers want cheap airline tickets, and we'd be in trouble if we lost track of that."

Start Small

As many Internet businesses have learned, you must establish a workable supply chain and reliable customer service before expanding. Many of the latest entrants to the Web arena have decided that they would rather take the mom-and-pop-store approach and expand after they've enjoyed some success.

Atlanta-based The Home Depot Inc. went online in August but decided to start small, Web-enabling only its six stores in Las Vegas and making them the fulfillment centers for the company's line of more than 40,000 products. Online shoppers in that region can either pick up their purchases at one of the stores or have the items delivered by Home Depot or UPS directly to a job site.

Depending on the success of the Las Vegas rollout, Home Depot will launch similar online sales programs in San Antonio and Austin, Texas, before the end of 2001.

Home Depot spokesman Jerry Shields says the Web site will keep track of each Las Vegas store's inventory in real time. The company will then replicate that model for each new region it develops, he says.

Educate Your Customer

Brian Sugar, chief Web officer at BlueLight.com LLC in San Francisco, says his company has prepared itself for the next wave of Web customers — those who aren't PC savvy. Blue-

Light was founded in December 1999 by Troy-Mich.-based Kmart Corp. and Tokyo-based Softbank Corp. and was designed to succeed where Kmart.com failed.

BlueLight decided that it needed to offer more than Kmart's product line to make a splash on the Web. Specifically, it began offering free Internet access through a partnership with Yahoo Inc. in Santa Clara, Calif. Though its model is more complex than Southwest's proposition, BlueLight believes it needs to create a unique market to make money in the retail world, where profit margins are low.

More than 1 million customers have signed on for the service, many of them Internet neophytes. Yahoo acts as their Internet service provider, while BlueLight runs pervasive advertising. The hope is that customers will think of BlueLight whenever they need to make a purchase.

"You really target Mom, who is the Kmart shopper," Sugar says. "Anything we can do to make buying online easier or more direct for Mom, we'll do it."

BlueLight is also selling its own branded low-price PCs — another initiative to increase the Web savvy of its potential shoppers. "It's all an effort to bring customers to us," Sugar says.

BlueLight claims it can reach profitability by the end of 2001 — an awfully quick turnaround in Internet time. But Sugar says that the money-burning days of Internet businesses have ended and that investors want to put their cash into moneymakers. "You don't spend X millions on a football ad or something that isn't tied to sales," he says. "You leverage your brick-and-mortar strength. You make sure what they buy you can ship to them, and make sure you ship it to them on time."

Sugar also emphasizes hiring staff who know what they're doing. BlueLight has 125 employees, most of whom were culled from other successful Web operations or technical giants like Sun Microsystems Inc. and Microsoft Corp.

At Southwest, its technical Web crew is housed inside the company's marketing department. Stillings says Southwest wants those two groups to work in harmony.

"We do all of our work on Southwest.com in-house," she says. "This is not just some technical offshoot of our business. It is our business." ✦

Checklist

- Keep the content simple and inexpensive to produce if you intend to make money.
- Make it fast. Simplicity also means faster page loads.
- Offer your best deals online to motivate customers to shop there.

DIGEX

MANAGED WEB AND APPLICATION HOSTING

YOUR SITE NEVER FELT SO SAFE

dige/

PLOT YOUR B2B Integration

BY CAROL SLIWA

B E PREPARED to learn some of the finer points of middleware and XML, if you're plotting an architecture to help your company participate in one or more of the business-to-business marketplaces that industry watchers predict will flourish in 2001.

Once you've built an on-ramp to a marketplace, one of the key challenges will be integrating data into the back-end applications that need to use it. That's where middleware can provide a crucial assist in translating, routing and securely delivering data and where XML-based messaging can make it easier to cope with data in widely varying formats.

But technology is only part of the equation, analysts warn. Before you start to think about software, your company will need to examine its business processes and trading-partner

relationships to figure out which ones will be affected and improved by the marketplace. Then you'll need to identify all of the applications and databases involved, because that information will affect the architecture decisions that have to be made.

While all that may sound straightforward, the work can get complicated, particularly at big firms. Several departments may have their own systems. The situation can become even more complex if there have been mergers.

Simoo Yates, an analyst at Forrester Research Inc. in Cambridge, Mass., says he recalls one large company that had several competing integration projects going on in different business units, "and it was essentially a race to see who could get their project done first." The strategy was to "force-feed" the winner's solution onto the others.

"It's extremely difficult to get everybody on the same page. But it will save lots of companies time and wasted manpower if they build a

general-purpose infrastructure across the company and pick vendors whose software is adaptable to future needs, regardless of business unit," Yates says, cautioning, "It's easier said than done."

Form a Multidisciplined Team

You can better organize that effort by forming a full-time central team with enterprise-wide and cross-enterprise scope to develop, deploy and maintain the integration infrastructure, advises Roy Schulte, an analyst at Gartner Group Inc. in Stamford, Conn.

The team will have to carefully assess the current infrastructure and plan for any additional software that may be needed. It'll get a head start if there's already a flexible, multitier architecture in place, with presentation, business-logic and database layers.

United Parcel Service of America Inc., for instance, unknowingly laid the foundation for future Web endeavors seven years ago when it

built custom middleware, running on an IBM AS/400 server farm, for a new client/server customer service initiative. IT staffers identified all the legacy applications and databases that would be needed and created a standard interface specification and message format for those applications, says Mark Hilbush, an Internet systems manager at UPS.

Atlanta-based UPS later adapted that infrastructure, adding Web and application server tiers, to launch the Web site customers now use to track their packages. That infrastructure could be modified further to connect to other presentation layers, including business-to-business marketplaces, Hilbush says.

Assess Existing Infrastructure

The messier and tougher job is back-end integration. Rick Hebert, a senior architect at NerveWire Inc., a consultancy in Newton, Mass., says clients have typically approached application integration in the following ways:

■ By building and designing a point-to-point integration system to "hard-wire" applications to talk with one another. "It's a very complex environment to manage," Hebert says.

■ By enlisting message-oriented middleware such as IBM's MQSeries or Palo Alto, Calif.-based Tibco Software Inc.'s Rendezvous. An application is connected to a message bus that manages communication between programs, which may be running on different operating systems. The downside is that data translation

between applications, as well as transaction management, still must be done, Hebert notes.

■ By using enterprise application integration (EAI) tools, many of which have been improved to handle a wide range of functions, including guaranteed delivery of messages between applications, transaction management, data translation and security.

Such middleware helps with external business-to-business integration and internal application-to-application integration. With this approach, each application and its integration characteristics are defined once in a metadata repository, Hebert says. "Using these EAI tools, we basically design the system once, and then we can tie into a number of marketplaces with very little custom work for each one," he says.

Companies, in turn, can check their trading partners' preferred means of e-commerce on the evolving Universal Description, Discovery and Integration Business Registry.

Vendors of integration middleware include Tibco, Extricity Inc., Neon Systems Inc., Vitria Technology Inc. and webMethods Inc. Microsoft Corp. aims to compete with its BizTalk Server, and IBM offers MQSeries Integrator.

While those products remove a good portion of the design and build work that developers used to do from scratch, Hebert says, "they're not silver bullets." Be prepared for a lot of analysis and design work, he cautions.

Some companies may decide not to use all of an EAI product's capabilities and may instead opt to use adapter code to connect to middleware they already have in place.

Eastman Chemical Co. in Kingsport, Tenn. has been processing more than 65,000 electronic data interchange (EDI) transactions per month with more than 400 trading partners. Now that it needs to deal with some partners using XML, Eastman has installed middleware from Fairfax, Va.-based webMethods to translate messages to XML and deliver them seamlessly to XML and deliver them currently and reliably, says Bill Graham, head of Eastman's Integrated Direct effort.

Graham acknowledges that webMethods, through its acquisition of Active Software Inc. can provide the internal EAI engine that his company needs, in addition to the external capabilities it's using. But, he says, Eastman Chemical was "already down the path" inter-

nally with MQSeries and plans to stick with IBM's product for sending messages to the SAP R/3 system it's installing to replace R/2.

Neither the webMethods nor the MQSeries middleware eliminated all the work. IT staffers chose to build adapter code to link MQSeries to R/3 because they deemed that the prebuilt adapters on the market were too expensive for the functionality they needed.

One way to off-load part of the overall work is to join a marketplace. Sears, Roebuck and Co. in Hoffman Estates, Ill., has 30 to 35 mainframe applications that use EDI-formatted files. IBM, which hosts and maintains the Sears system, translates the transaction files and transmits and loads them in batch mode into the mainframe applications, explains IT resource manager Pamela Cox.

That back-end system didn't change when Sears joined San Francisco-based GlobalNetXchange LLC's (GNX) marketplace. IBM simply connected to a middleware server from Cyclone Commerce Inc. in Scottsdale, Ariz., that Sears installed for security. The messages then go from the Cyclone server to GNX, which translates them into the format in which Sears' trading partners need to receive them and then delivers them.

Over time, says Cox, Sears will write new applications that will generate and accept the more neutral and flexible XML format. But "it will take a long time before the EDI files will be gone," Cox predicts. "Some are very old legacy applications that are working fine."

GNX won't push them. Gerry Palmer, chief technical officer at GNX, says the exchange is "very agnostic about EDI vs. XML." Palmer says he sees the benefits of XML for handling rich message content. But he says he also recognizes members' huge investment in EDI, not to mention the increased processing power and bandwidth needed for XML files, which can be five to 10 times larger than EDI files.

Evaluate XML Standards

Some analysts say those concerns are unfounded because bandwidth and disk space are plentiful. But that's not the only potential hurdle with XML. In the absence of XML standards, vendors and vertical industry groups have tried to define purchase orders, invoices and other important business documents. That has forced many companies to support many different XML document types.

Office Depot Inc. in Delray Beach, Fla., for instance, supports Ariba Inc.'s Commerce XML (CXML), Commerce One Inc.'s Common Business Language (CBL), Datastream Systems Inc.'s iProcure network, standards from the Open Buying on the Internet Consortium, and XML interfaces developed in-house.

Problems surface when firms implement the same CXML or CBL document differently. One customer might put a shipping or department field in a different place than another customer would, says Mike Kirschner, vice president of e-commerce development at Office Depot.

"We have to support inconsistent standards, and that's what causes us the most pain," says Kirschner. "If you look at EDI, the reason it's successful, they figured all that stuff out." ✦

Checklist

■ Examine existing business processes and trading partner relationships with an eye toward improvement.

■ Build a general-purpose infrastructure across your company and with vendors whose software is adaptable to future needs.

■ Form a team to develop, deploy and maintain the integration infrastructure.

CRANK
UP THE
VOLUME.

John Jackson, Chief IT Communications officer, San Francisco State University, advises businesses to make recruiting a clear company affair. "Everyone is in the company."

BY DAWNE SHAND

L OOKING TO HIRE? Kevin might be
available. He recently jumped
ship from an e-commerce con-
sulting firm. As a top-notch Java
programmer, Kevin worked on
complex Web projects for both
dot-com and Fortune 500 clients.
But he tired of the workload pen-
dulum, which swung violently between 20- and
100-hour workweeks with no additional com-
pensation. To add insult to injury, Kevin had to
rewrite Java code for a contractor who had
earned $300,000 in six months, while Kevin
earned far less. Few on his project team under-
stood (never mind appreciated) what it means
to be a skilled computer engineer.

So Kevin and a fellow engineer have decid-
ed to start their own firm. They don't want to
work through an agency, because work is plen-
tiful. They just want to do quality software
engineering and have time left over to snow-
board this winter.

How do you lure someone like Kevin? That
depends. Do you know your company's future
needs? And do you have a strategy for finding
those skills or developing them in-house? To
help you answer those questions, we gathered
some tips from recruitment experts.

Know Your Skills Needs

Michael McNeal, co-founder of PureCarbon
Inc., an application service provider in Scotts
Valley, Calif., was formerly head of employee
development at Cisco Systems Inc. in San Jose.
While at Cisco (which has an attrition rate of
just 7%), McNeal took the company from
4,800 employees to 30,000. Now a recruitment
consultant, he tells companies to develop a
hiring strategy that links business needs with
workforce planning. McNeal says you should
think carefully about what your business will
look like, identify the workforce's current
strengths and weaknesses, and figure out what
gaps could appear in the future.

And remember: There's no point in recruit-
ing successfully if employees don't stay. These
days, retaining talent involves careful atten-
tion to individual skills development. More
and more, managers rank the ability to help
employees develop new technical skills as a
high priority. For that, you'll need the exper-
tise of your human resources department.

Be a Free-Agent Scout

Once you know what your company needs,
decide the best way to find the right people.
The perfect candidate might be working at an
obscure firm or as an independent contractor.
Or the best person for the job could be the
neighbor of the administrative assistant in the
IT department, or the competitor who visited
your booth at the Comdex show. To find these
people, communicate your recruiting strategy
to the entire company and form partnerships
with other departments, such as human re-
sources and marketing. Successful recruiting
involves the whole organization.

The current rage in recruiting is to poach
dot-com talent, but those folks may not be a

Snag THE BEST Talent

good cultural fit for your company. They may
have been drawn to a dot-com by the promise
of riches, and your company may not be will-
ing or able to meet their demands. And dot-
coms rarely have training programs that keep
employees' technical skills current.

And if you decide to pursue employees who
have been displaced by tanking Web ventures,
you'll find that those candidates aren't as plen-
tiful as you might have heard. A recent report
by Chicago-based outplacement firm Chal-
lenger, Gray & Christmas Inc. notes that in the
first nine months of 2000, Web companies laid
off 16,289 people, compared with 392,296 in
traditional business sectors.

So again, remember what McNeal has
learned: Strategy is key. Know what skills,
expertise and competencies you require be-
fore phoning the latest failing dot-com.

Kevin's experience speaks volumes for to-

Checklist

- Make everyone a recruiter. Everyone at
  your company should know the number
  and type of recruits needed.

- Recruit all the time. If you don't, you'll
  miss candidates and the company will
  look vulnerable.

- Close deals fast. Companies that are
  prompt decision-makers are more likely
  to land the best recruits.

day's recruiting manager. The exodus from the
stiflingly large corporate environment to the
perceived autonomy of the small firm or dot-
com has dispersed talent. Self-employment
has blossomed, too, which means these poten-
tial employees will be even harder to find.

To complicate matters, there has been a sub-
tle shift from dependency on placement firms,
notes John Rossheim, who coaches free agents
from his home in Rhode Island. "Some of the
best [talent] are going the free-agent way," he
says. Their reasons are much like Kevin's: the
desire to be compensated appropriately for
hours worked and to have more autonomy.

Rossheim says these people are reluctant to
hand over a large chunk of their fees to place-
ment agencies. So for managers, hiring directly
can mean lower overall costs but more time
invested in locating candidates.

Because marketing yourself as an indepen-
dent contractor is tough, many free agents are
underemployed. Smart managers should seize
that opportunity and incorporate free agents
into their workforce, says Daniel Pink in
Washington, who has been observing and re-
searching the free-agent phenomenon and is
author of The Free-Agent Nation (Warner
Books, March 2001).

Pink's assessment: "Getting work for free
agents is really hard. The need for connection
is greater, not less." These free agents may
even revert back to the corporate world, given
the right environment. So start scouting now.

Make Everyone a Recruiter

John Sullivan, professor and head of human
resources at San Francisco State University,
offers this summation: "Everyone sells the
company." Sullivan lectures on recruiting and
recently returned from a leave of absence
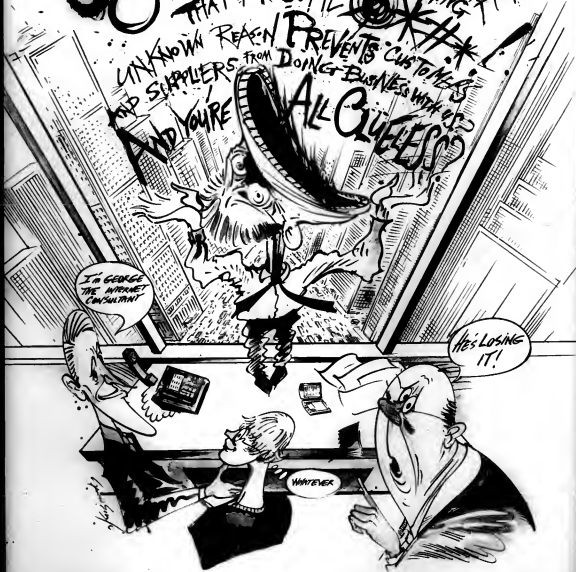during which he served as chief talent officer

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Snag THE BEST Talent

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at Agilent Technologies Inc., a division of Hewlett-Packard Co. in Palo Alto, Calif.

Recruiting is selling, he says, and it's everyone's business. Recruiters can't effectively sell savvy technologists, because they don't really know the technology. Instead, managers have to own that process.

At Agilent, Sullivan employed the "open-house" model. Agilent wasn't as well-known as its parent company and therefore couldn't bank on the appeal of brand or traditions to lure talented workers. But once Agilent opened its doors, "the tradition, culture and values came through," says Sullivan. Coupled with on-the-spot job offers, open houses can work wonders.

Both Sullivan and McNeal are big believers in employee-referral programs. People recruited by referrals stay longer and perform better, says Sullivan, and it's the cheapest method of recruiting. He adds a twist: Don't stop at offering a one-time incentive for the referring employee — throw in an extra bonus based on the performance of the new hire.

Sound too radical? Here's another savvy sales technique: Step aside and let the big boss deliver the job offer. Definitely don't send the recruiter to close the deal; it makes the manager look disinterested.

And about those help-wanted ads: Sullivan says advertisements for job openings should follow good press. If a magazine writes positively about your company and why it's a great place to work, then advertise for job openings in that issue. More people will pay attention to an ad that follows a great story than to an ad that's buried in a help-wanted section.

Know How to Market

Although highly encouraged by top recruiters, stealing talent from competitors is probably insufficient, as companies have become more aggressive about retaining employees.

"Being competitive isn't enough," says Jim Kochanski, head of Sibson & Co.'s talent management practice in Raleigh, N.C. "Companies need to have a distinctive quality." That might mean being family-friendly, for example, by providing comprehensive health benefits and flexible hours. The company then becomes a talent magnet for those who think that's important. Therefore, defining and enforcing the qualities that make your company special becomes the cornerstone of a recruiting effort.

Many need recruiting ideas are taken from marketing's playbook. McNeal recalls a ball-bearing company that created a product with a few mechanical qualities that were appealing to the scientific community. He advised the company to start a newsletter rather than build an employment Web site. He suggested that the company advertise the newsletter to scientists who would have an interest in the technology, provide free subscriptions and then mine the list of readers for recruits.

Recruit subscribers, not publications! Newsletters build reputations; they're a marketing tool. Recruiting, much like direct marketing, is about getting the best targeted list of names.

Cisco takes this a step further and uses demographic data. McNeal says he made a point of setting up recruiting booths at events where the demographics matched the interests of the company's existing workforce. No one expected Cisco to appear at a home and garden show or an international beer festival — including its competitors.

IT managers must also do some counter-intelligence work. Kochanski says his clients are finding that many recruits get cold feet after giving their notice because their employers often make counteroffers. He says he has also noticed the growing trend of people staying in a new job for only a week before being lured back by a former employer.

Kochanski advises clients to stay in continual communication with recruits once an offer has been extended. Check in to make sure everything is OK and reassure them that their decision was a good one. Don't give recruits a reason to change their minds.

Also, once new employees get settled, ask them to recruit former colleagues. They, too, can be useful spies. Just because one department has filled its quota, that doesn't mean a manager down the hall isn't short-handed.

Here's another piece of advice: Make job descriptions sing. Every top recruiter has a beef with standard job descriptions, which are often poorly written and sound dull. How many people pass over an employment Web site because the job descriptions lack appeal? So behave like an editor: Find good writers, ask for zip in descriptions and edit lightly.

And remember, it takes more than one individual's efforts to find good employees. Follow these tips and recruiting becomes a collaborative effort of the whole organization. ◆

Shand is a freelance writer in Arlington, Mass.

Hewlett / Dan Kaberon: *The so-called challenge is to provide continuous application availability amid changing conditions.*

RETOOL YOUR
Data Center

BY JAIKUMAR VIJAYAN

TRANSFORMING A DATA CENTER for e-business is almost like rebuilding a 747 while it's flying. But it's a challenge you may have to face this year as more companies move their businesses to the Web.

"Given that the whole world is webifying everything at a million miles an hour," companies have no option but to keep pace, says Dan Kaberon, Parallel Systems manager at human resources outsourcer Hewlett Associates LLC in Lincolnshire, Ill. "The real challenge is to provide continuous application availability while changing everything around you."

The massive growth of e-business applications has already driven fundamental changes in the data center, which is now larger, more complex and more heterogeneous than ever before. Data centers are quickly evolving from siltlike environments that host separate application islands to multivendor operations centers that feature a slew of tightly integrated yet function-specific host-based, Web, database, application and storage resources.

And there will be a lot more of these operations centers going live this year as companies scramble to set up new facilities to address the growing need for around-the-clock availability throughout the year, says Carl Greiner, an analyst at Meta Group Inc. in Stamford, Conn.

"What you are seeing is companies trying to distribute work through the network into two centers that are both hot and can absorb the work of the other" in a failure, Greiner says. Such redundancy is being repeated across networks, hardware and core applications, he adds. Mainframes are also moving from hosting mainly platform-specific legacy applications to supporting newer, distributed applications like enterprise resource planning, customer relationship management and e-commerce.

Where data centers of the past used to be tied together via internally controlled private and leased networks, the trend is toward externally managed virtual-private-network- and Internet-based connectivity. And where there was little interconnection among applications serving different enterprise divisions, the focus is almost totally on melding applications — and access to them — across the enterprise and outside of it.

Not surprisingly, the task of managing the newer environment has also inexorably grown, says Adolf Barclift, a senior vice president of information services at Metris Co., a Minnetonka, Minn.-based financial services firm.

"The 'new world' data center is a networkcentric information center that puts external customers first in the priority line," says David Floyer, vice president of ITCentrix Inc., a consultancy in Mountain View, Calif. "[It] centrally manages both internally and externally connected resources, using the acceptance of In-

ternet Protocol as a catalyst for common communications across IT boundaries."

Maintaining the availability of current legacy and back applications is only one part of the challenge, says Barclift. Increasingly, it's also about understanding business objectives and knowing how to manage interconnected applications and processes.

"From a process point of view, things are a lot more complicated," Barclift says. "If you look at an e-commerce environment, a transaction might have to pass through multiple environments, some of which you don't even have control over."

Know Your Business Model

The most fundamental way to ease the transition is to get a better understanding of your business model, customer needs and how applications interact with one another in a Web-enabled world.

Have an architecture that lets administrators add, remove, test or repair hardware and software — without taking down the complex. Break large applications into smaller components, if possible, and distribute them across multiple resources to minimize the consequences of a software or hardware breakdown.

Remember that availability is key — but it isn't necessary or even feasible to make every application continuously available. Instead, prioritize applications according to their importance to your business. Mirror everything, especially the applications that simply can't go down. Make sure there are adequate high-availability and backup measures for everything else. And plan for ample capacity — scalability is almost as important as availability.

In an environment where time-to-market is vital, forget the big-bang software and hardware rollout. Upgrade in increments, if possible. Buy off-the-shelf software and layer any needed customization on top of that. It's also key to have a central point of technical and end-to-end management control.

"IT organizations face enormous pressure to create new transaction systems that integrate with legacy information to enable online buying, best-in-class customer service and seamless partner connection," Floyer says. "To respond, companies must completely reengineer their management approach." ✦

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PICK YOUR
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BY DEBORAH RADCLIFF

DISTRIBUTED DENIAL-OF-SERVICE attacks, self-replicating e-mail viruses, electronic security insurance, outsourcing: These are just a few of the myriad issues that landed on your information security manager's watch list last year, and even more are expected to arrive in 2001.

Your chief security officer faces so many new issues, in fact, that we polled 35 security vice presidents, officers and managers to determine the top 10 hot spots (see chart, page 39). We conducted our informal polling in October at the SANS Institute's Network Security 2000 conference in Monterey, Calif.

Your security officer's to-do list is loaded: Comply with new security and privacy regulations in health care and finance; develop stronger user-awareness policies; and address more security issues, thanks to the growth of wireless access, business-to-business exchanges and application service providers (ASP).

But there is a silver lining: Nearly all the security officers we spoke with said they agree that this year's No. 1 issue — the adoption of international security standards — may simplify some of these complexities.

[**Checklist**

- ■ Put together a security team to get up to speed on HIPAA and Gramm-Leach-Bliley Act requirements.

- ■ List your company's top vulnerabilities and look at critical applications to determine risk levels.

- ■ Develop stronger user-awareness policies. Teach users to protect confidentiality.

- ■ Get involved. Join a working group that's helping to draft international security standards.]

Make Employees Aware

It took self-replicating viruses and distributed denial-of-service attacks to get users thinking about security during the past year, says Pete van de Gohm, director of information asset protection at Enron Energy Services

Inc., a subsidiary of Enron Corp. in Houston.

But security managers still have a lot more work ahead of them: Threats from internal employees account for nearly 40% of all security breaches, according to a joint survey of 273 organizations that was released last March by the San Francisco-based Computer Security Institute and the FBI.

The problem is exacerbated by high employee turnover, adds Paul Raines, vice president of information asset protection at the Federal Reserve Bank of New York.

The key to surviving these increasingly complex attacks will be creating security awareness campaigns. These programs should cover three areas: access-control management, root (Unix) and administrative (Windows NT) access, and information handling by both permanent and temporary employees, Raines says.

Keep these policies simple, follow up with refreshers and use media coverage of security events to keep the issue on users' minds, adds Michele Guel, a security engineer at Cisco Systems Inc. in San Jose.

"We're getting there, in terms of teaching our user bases to protect confidentiality," van de Gohm says. "The test this year will be to raise awareness with more creative viruses and Trojan [horses] than Melissa and 'I Love You' to fuel [user-assisted breaches]."

Create a Mobile Policy

User policies must also cover remote access, especially considering the prediction of 55.4 million mobile workers by 2004 by Framingham, Mass.-based IDC.

"Mobile workers and wireless connectivity to your entire network opens a giant security hole," says Ruth Lestina, regional practice lead for information security consulting at network infrastructure consulting firm Predictive Systems Inc. in New York.

Some 38% of 300 security professionals reported break-in attempts through remote systems last September alone, according to an October survey conducted by Cupertino, Calif.-based security vendor Symantec Corp. Yet only 13% of those companies use a desktop firewall for remote workers. For this reason, desktop firewall systems from vendors like Zone Labs Inc., Network Ice Corp., Network-1 Security Solutions Inc., Network Flight Recorder Inc. and Symantec will be big sellers.

"You'd be surprised how many firewalls we're selling in the enterprise," says Avi Fogel, president and CEO of Waltham, Mass.-based Network-1.

Wireless devices are more problematic than any other type of mobile equipment. This past year, one Trojan horse and two virus threats against PalmPilots and cell phones, along with a virus found in a German cellular network, were punished, although none proved serious. In September, Symantec introduced antivirus software for the Palm operating system, but most wireless security software focuses only on access controls through elliptic-curve cryptography (ECC), a smaller, more portable form of data encryption.

Vendor products that use ECC encrypt data only as it travels from the wireless device to a Wireless Access Protocol (WAP) server, says Luther Martin, product manager at encryption vendor Cylink Corp. in Santa Clara, Calif. The second half of the transaction travels from the WAP server to the Web with Secure Sockets Layer browser encryption. But the WAP server processes all data and credentials in the clear, or unencrypted, which Palm has referred to as a "small air gap."

Martin says this gap is a lot bigger than vendors want it to appear: Hackers need only exploit known vulnerabilities in common operating systems to view the data and credentials.

Pick an Authentication Method

As more access devices go mainstream, mechanisms for authentication (who you are) and authorization (what you're allowed to see) will continue to diversify. Smart cards and biometric access devices will lead the way.

Frost and Sullivan Inc., a consulting firm in Mountain View, Calif., predicts a \$5 billion smart-card market by 2003. The biometric access device market will be much smaller — \$594 million by 2003, according to International Biometric Group LLC in New York.

"Our organization is looking closely at mechanisms for two-factor authentication. Biometrics may play a role, but our focus now is smart cards, which is becoming a standard product as [smart-card] readers have become cost-effective," says Ken Perrin, a senior engineer for IT planning and business development at Pinnacle West Capital Corp. in Phoenix. He and others predict that interoperability will still be a problem this year and beyond.

Chief security officers will also want to choose an authentication management system. Such systems can link rules engines to directories that contain user attributes and privileges to restrict access to certain types of data. These systems are capable of managing a variety of access devices, including wireless, says John Pescatore, an analyst at Gartner Group Inc. in Stamford, Conn. [Technology, Sept. 11].

Bolster Your Architecture

Issues like these spur improvements in overall security infrastructures, which, for the most part, are woefully inadequate to support online businesses, says Leon A. Kappelman, information systems research director at the College of Business Administration at the University of North Texas in Denton.

A key driver for infrastructure work will be companies' attempts to overcome outdated networks and comply with the new Healthcare Information Portability and Accountability Act (HIPAA), which regulates security and customer privacy in the health care industry, says Lestina. She also predicts limited infrastructure reworking in the financial industry to comply with the Gramm-Leach-Bliley Act, a financial deregulation bill approved in 1999.

Kenneth Cole, MIS director at Sun Healthcare Group Inc. in Albuquerque, N.M., says it will take his organization two years to complete HIPAA compliance work. "At our corporate office, this will involve changes to our security policy, with a strong emphasis on employee education," he says. "At the subsidiary level, we will also have to ensure compliance at both the state and federal levels."

Bulletproof Your B2B Exchanges

Business-to-business exchanges will also force infrastructure work this year, according to Chuck Ryan, director of information security at Metec Inc. in Lisle, Ill., which manufactures parts for mobile computing devices.

"Security becomes very big when you look at the chain of events that need to occur relating to a transaction. Each link has to be secure, because everyone in the chain is a potential competitor," explains Glen Gow, president and CEO of Crimson Consulting Group Inc. His Los Altos, Calif.-based research firm predicts \$3.9 trillion annually in global business-to-business transactions by 2003.

Varying information on privacy and

PICK YOUR
Security Officer's Brain

encryption will further compound the task, says Ryan, who projects that most companies will ease into conducting business-to-business transactions during the next two years.

Recruit Top Talent

Your chief security officer will be on the hunt for streetwise security experts like Ryan next year. Lestina suggests that security officers will need to become more creative in their staffing efforts, finding most of their employees inside the organization and then mentoring and training them [Careers, Sept. 25].

Last year, the leading industry-recognized training and certification program was the Certified Information Systems Security Practitioner, offered by U.S.-based International Systems Security Certifications Consortium Inc. (www.isc2.org). In the coming year, expect more diverse and specialized security training through organizations like the SANS Institute in Bethesda, Md., which is getting rave reviews from IT managers for its rigorous training and certification programs, including intrusion-detection, firewall and incident-analysis certifications.

Train Regulatory Experts

Chief security officers also face a shortage of privacy experts this year, as the medical and financial industries feel the squeeze of the HIPAA and the Gramm-Leach-Bliley Act, according to van de Gohm.

However, because there are so many regulatory-driven, privacy officers will most likely originate from legal and consumer affairs departments, says Alan Westin, professor of public law and government at New York's Columbia University and president of Privacy and American Business, a privacy research and professional services group in Hackensack, N.J.

Still, the security team will need to get up to speed on HIPAA and Gramm-Leach-Bliley requirements because it will be directly overseeing the technical and employee-awareness compliance initiatives.

Choose a Reliable ASP

Customer and commercial data processed at ASP sites will also complicate the job of the chief security officer. IDC predicts that the ASP market will grow at a compounded rate of 93% per year — from $74.4 million in 1999 to more than $2 billion in 2004.

Tony Partakle, chief technology officer at Maxxim Medical Inc. in Clearwater, Fla., says ASPs will face a number of security challenges this year, like working with second- and third-tier business partners and monitoring traffic.

In fact, advises Pescatore, you shouldn't even consider an ASP that can't address security at the network, platform, application, operations and end-services relationship levels.

Determine Your Risk Level

Your security officer will need to distinguish between risks and threats, says Peter Tippett, chief technologist at TruSecure Corp., a security services firm in Reston, Va. "IT managers need to learn how to behave in risk-based orientation instead of threat-based," he says.

Here's how: Start with a list of top vulnerabilities, like the one found at the SANS Institute's Web site (www.sans.org/topten.htm). Next, look at critical applications and determine what level of risk your company can assume in order to see those processes through, says Ryan.

"The core of it is getting down to your own developers and your customers inside your business and prioritizing business and technical requirements," he says.

Get Involved in Standards

The underlying key to all of these issues is standards. "In order to achieve e-commerce, you must have security standards," says Jerry Dixon, director of information security at Marriott International Inc. in Bethesda, Md. "The industry ... still has a long way to go to enable true e-commerce. A prime example is public-key encryption. We cannot validate a digital signature among competing products."

Dixon says he's heartened to see not only vendors but also the security community at large start to pass standards that will simplify some of the complexities faced by IT security leaders. For example, he points to the Common Vulnerabilities and Exposures (CVE), an indexing system for vulnerabilities and threats that was started last year by Bedford, Massachusetts-based Mitre Corp., a research and support agency for the U.S. Department of Defense.

"[The CVE] effectively created a national standard on communicating different types of vulnerabilities and exposures so that all agencies — commercial vendors, alert publications and newsgroups — are speaking the same language," Dixon says. "This now allows security teams to effectively communicate exploits or findings with one another."

The key with standards is to get involved. There are several working groups currently hashing out security standards. The SANS Institute is working with the Center for Internet Security in Bethesda, Md., and Visa U.S.A. Inc. in Foster City, Calif., to release security standards by mid-July. And last October, the International Standards Organization in Geneva published a first draft of fast-track security standard ISO 17799, an outgrowth of a British standard.

Widespread adoption of such standards will be the only way to advance robust business-to-consumer commerce this year, says Dixon.

Van de Gohm agrees: "ISO 17799 will help to demonstrate that you've met a minimum level of integrity. It will introduce that elusive element of trust, because business partners can say, 'I know what your security processes are, since we both have the same certification.'" ✦

YOUR SECURITY OFFICER'S TOP 10

- Standards
- Employee awareness
- Remote and wireless access
- Authorization and authentication
- Architecture
- Business-to-business
- Recruiting
- Privacy
- Application service providers
- Risk management

STRATEGIZE YOUR
Win 2k
Migration

Checklist

- Make absolutely sure your hardware will support Windows 2000.
- Allow ample time to plan and execute. A company with 2,000 or 3,000 servers might need three years.
- Choose your pilot installation carefully — one that's representative of the whole yet won't disrupt the core business.
- Train existing staff whenever possible, but leverage consultants to add breadth of experience.

BY ROBERT L. MITCHELL

WHEN MICROSOFT CORP. introduced Windows 2000 last February, you may have been among the many IT managers who were wary of moving forward too quickly. But now that Service Pack 1 has shipped and early adopters have come forth with several months' worth of war stories, you're probably not pondering whether to pull the Windows 2000 migration lever, but when and how.

Well, your first instinct was right — don't move too quickly. The key to success, say IT managers who have started down that road, lies in copious planning.

"It's a much bigger undertaking" than you might think, says Mike Giresi, director of telecommunications and desktop services at

Win 2k Migration

Campbell Soup Co. in Camden, N.J. Campbell is in the early stages of its move to Windows 2000 from 6,500 NT Workstation desktops and 150 NetWare 5.1 file-and-print servers and Windows NT 4.0 application servers. "For everything from the network on through, you need to include all those cost factors or you will underfund the project and it will not be completed properly," Giresi says.

Campbell Vice President and CIO Mike Crowley also advocates the go-slow approach. "We have been planning and doing research and participating in work sessions with our peers, with other vendors, with other major software providers, which is why we haven't moved more aggressively," he says. "We want to make sure we do it as efficiently as possible."

Articulate the Benefits

The key to migration is making sure you not only understand the benefits of migrating to Windows 2000, but are also able to convey those to your audience, whether it be end users or departmental IT peers, says Jerry Higgins, a senior manager at Allstate Insurance Co. in Northbrook, Ill. Allstate plans to begin migrating more than 60,000 NT workstations in March, with 2,500 servers to follow by fall.

But since Allstate has a decentralized IT infrastructure, Higgins relies on individual business units to deploy the server and workstation disk images he issues, so it's important that everyone understand the benefits and the pool.

It's also important to decide which servers should be upgraded and in what order. Duo Kuznetsky, an analyst at Framingham, Mass.-based IDC, says managers are upgrading "largely file-and-print services to begin with, with increasing use [of Windows 2000] as an application platform."

New applications that require Active Directory, such as Exchange Server 2000, may put application servers at the top of the list — and offer the ammunition you need to justify a general migration to Windows 2000.

Migrate Selectively

Migrate no application before its time, warns Giresi. "We have close to 100 [applications], many of which are not compatible with Windows 2000 yet," he says.

"We've tested these, and they all seem to work. [But] if something does fail, we can't go back in the vendor and troubleshoot it," adds Crowley.

Even if you have some noncompliant applications, you can still move forward with a mixed Windows NT/2000 environment, says Tony Bernard, director of technical architecture at business-to-business exchange service vendor Freemarkets Inc. in Pittsburgh. Bernard, who has approximately 10% to 15% of his 600 users and 120 servers worldwide running Windows 2000, says he can't wait for the Windows 2000-compliant version of his new software from Siebel Systems Inc. in San Mateo, Calif. "We will deploy Siebel on NT 4 and upgrade when we can," he says.

But even Windows 2000-certified applications won't run well without the right hardware, so make sure your hardware will support Windows 2000. "If you go out thinking that 3-or 4-year-old hardware will support Windows 2000, you are sadly mistaken," says Giresi.

And on the desktop side, "it's fundamental to configure the client and do it right the first time," Crowley says.

Look Hard at Active Directory

Perhaps the most critical planning component is Active Directory, Microsoft's integrated enterprise directory system for Windows 2000. "Companies should be very careful here because . . . it can be extremely costly to go back and do it again," says Giresi.

Unlike pure Windows shops, Campbell Soup uses Novell Inc.'s Novell Directory

> ## We're picking our opportunities where reliability is critical. But we're not upgrading everything just to upgrade everything. If there's business value there, we're going to go after it.
>
> TONY BERNARD,
> DIRECTOR OF TECHNICAL ARCHITECTURE,
> FREEMARKETS INC.

Services (NDS), which has higher expectations of Microsoft's directory service. But forget about making a migration decision based on the technical merits of Active Directory vs. NDS, he says.

"I think that Microsoft has yet to prove that they have the same functionality [as NDS]," Crowley says. Despite these concerns, however, he says he's leaning toward a full implementation of Active Directory. "It's the right business decision" to consolidate on one directory and one network operating system, he says. "The fewer technologies you have, the cheaper it should be to run your operations."

Allstate's Higgins says you should be aware that planning the Active Directory structure involves more than technical issues, particularly when IT management is distributed.

"Political conversations occur when one [IT department's NT administrative] domain gets collapsed into another" in the new Active Directory structure, he says.

In short, IT managers need to create the structure right the first time, which requires a good technical design. But that can't happen unless all parties agree to the new structure and its management implications up front.

Block Out Ample Time

Give yourself plenty of time to plan and execute if your company is large. How much time? "If you're a large organization with 2,000 or 3,000 servers, that might be a three-year process," says Kuznetsky.

At San Francisco-based Wells Fargo & Co., enterprise engineering manager Scott Hall spent 18 months planning a single, monolithic 120,000-user Active Directory structure. Of those, "40,000 users are now ready to use Active Directory for authentication," he says. Hall says he hopes to complete his migration by the end of 2001.

Bernard's advice: "If you've got a complex domain structure or a lot of servers, a more gradual migration approach is better on multiple fronts. You can spread your investments, and the planning is critical."

And don't be afraid to limit the scope of the project, Bernard cautions. "We're picking our opportunities where reliability is critical. But we're not upgrading everything just to upgrade everything. If there's business value there, we're going to go after it," he says.

Once you have your plan in place, carefully design your pilot installation. "Pick something that's representative enough that you will be able to test the features that are important to your organization but discrete enough that if the technology doesn't work out, you don't disrupt your core business," says Bernard.

Decide Whether to Outsource

Bernard recommends training staffers rather than bringing in consultants when preparing for a Windows 2000 migration.

"Our people put in a lot of time to come up that curve," he says. "[But] it wasn't that disruptive, and [the staffers] were energized to be involved in something new." Bring in extra help for the mundane work, he advises.

Higgins says he agrees in principle but when you're planning a major migration, there's no substitute for experience. "Allowing [staffers] to work on the newest technologies is one method of enriching their work experience, [but] we have had to leverage external consulting personnel who have been through migrations at other corporations," he says.

Prepare Top Brass for Cost

Finally, while return on investment is important, don't expect to base a migration decision exclusively on ROI, users say. Higgins acknowledges the costs but says his organization accepts that a migration is a must. "We look at it, to a large extent, as an extension of the technology we already have," he says.

That's not to say that IT management should ignore price. Hall advises getting a tight handle on migration budgets and preparing top management for the bill. "When we did the cost justification, our executives fell over," he says. "We have 1,700 domain controllers. Think of the support costs and licensing costs." ✦

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GET **PAYBACK**
ON
Wireless

BY MATT HAMBLEN

WHAT A DIFFERENCE five years makes in the fast-changing wireless world. From a failed wireless project in the mid-1990s, Andy Kasznay learned how to get payback from a current inspection-reporting application.

The wireless project launched in 1995 by Northeast Utilities Inc. in Berlin, Conn., failed at a cost of $1 million, says Kasznay, a software engineer at the utility, which has 1.2 million customers.

"It was a year and a half of time lost, with a year trying to make it work and half a year realizing it wouldn't work," he says in reflection. "I considered it a huge loss, but we learned a lot."

In fact, the lessons learned from a wireless failure could make your next endeavor a success. What Kasznay and Northeast learned helped the utility build another wireless application two years ago that's still working well, Kasznay says.

With the current application, 15 field inspectors carry rugged laptops equipped with wireless modems. They connect to an enterprise database to track spills of hazardous materials such as polychlorinated biphenyls, also known as PCBs, which are used to insulate electricity transformers.

The application lets chemists and people who monitor government environmental filings get up-to-the-minute reports. It also saves time, because all the information is entered directly into the proper fields without having to be transcribed.

Start With Small Projects

"It's definitely paying for itself over the paper-based system," Kasznay says. "In fact, we have better information everywhere in the organization and a reduction in the things that have fallen through the cracks." He says each rugged CF27 laptop from Panasonic Personal Computer Co. in Secaucus, N.J., costs $6,000,

and each month of airtime per user costs approximately $30.

Kasznay's wireless failure-to-success experience isn't uncommon and provides lessons for how firms should deploy wireless projects.

The best advice is to start small and work up to bigger projects. At Northeast, for example, the success of the spill-reporting application has given IT workers the confidence to consider sending power-outage reports to executives via smart phones and wireless information to crews repairing streetlights, Kasznay says.

He says the 1995 failure spurred Northeast to build a reliable wireless infrastructure. Because even the best wireless networks have gaps in service, Northeast also built in the ability for inspectors to download data to a laptop on a reported spill and keep inputting data even if they hit a dead coverage zone. What they report is then automatically cached until a wireless connection is reestablished.

Software from Sybase Inc. subsidiary iAnywhere Solutions Inc. in Emeryville, Calif., and Broadcom Corp. in Princeton, N.J., was used to help link the application to a database and cache information.

From an organizational standpoint, it's important to keep users informed during planning. In the inspector project, Northeast pulled together end users and software and wireless experts for biweekly planning meetings, something the utility hadn't done in its first undertaking.

"We learned that people are not used to the wireless paradigm," Kasznay says. "Wireless is really a different medium from the Internet and other forms of communicating."

Choose a Reliable Network

At Guaranteed Overnight Delivery in Newark, N.J., the organizational learning curve has been steep. But a wireless package delivery application that's cost-effective and increases productivity has been found, says Heath Snow, director of technology.

Guaranteed believes that a fast, reliable wireless network and inexpensive off-the-shelf hardware have made a big difference in the latest application, according to Snow.

"It's been a grueling path to go through," he says. "But our current application has reached return on investment in a year."

Guaranteed has equipped its drivers in the northeastern U.S. with about 300 wireless handhelds from Research In Motion Ltd. (RIM) in Waterloo, Ontario, for the past 12 months, Snow says. By using the devices to get delivery information wirelessly from a dispatcher, drivers now make as many as 20 deliveries per day with as many as 30 pickups, compared with 15 deliveries and five pickups before the handhelds were used.

Cingular Wireless in Atlanta, formerly Bell-South Wireless Data LP, provides "fantastic" network coverage and response times of 56K bit/sec. for short-message connections, Snow says. If a driver moves out of the coverage area, the system keeps repeating a message until he's back in range. The RIM handhelds, each of which costs about $350, have replaced two previous ruggedized handhelds that cost as much as $3,000 apiece, Snow says. But Guaranteed has a long-term deal with Cingular that allows it to get updated hardware when it comes on the market. The cost of airtime is up to $40 per month, Snow says.

He attributes the increase in driver efficiency to a more reliable network. Drivers and dispatchers get a confirmation when a message is sent, which saves them from having to find a phone to double-check. With the new system, drivers don't even carry cell phones, which increase costs, Snow says.

Know Your Needs

Wireless users not knowing what they want from a wireless service, like poor reliability, and what they don't want — which, for some, is advertising — can help with the success of the project. For Dr. David Donnell, an internist in private practice in Dallas, wireless prescrip-

tions have saved him and his staff two to three hours per day, for a savings of about $150 per day, he estimates.

Donnell pays $50 per month to ePhysician Inc. in Mountain View, Calif., for a wireless service that allows him to carry patient records on a Palm V device from Santa Clara, Calif.-based Palm Inc. On the handheld, he can pull up a patient record, write a prescription for a new drug or refill and have the prescription sent wirelessly to a fax machine at a pharmacy. "I've even sent a prescription from a boat in the middle of a lake an hour south of Dallas," he says.

With an active database of 2,000 patients, Donnell estimates that he receives requests for nearly 100 prescriptions and refills each day. Before he started using the wireless system eight months ago, he tried two other wireless prescription-ordering systems that were free but required him to read advertising from pharmaceutical companies, which he dislikes.

"In 10 years, I've never learned anything from a pharmaceutical ad," he says. "I'd rather pay $50 a month to avoid the ads."

One of the other wireless prescription systems he used wasn't reliable. "We'd send a prescription to a pharmacy wirelessly up the street in Texas and a pharmacy in Oregon would call to ask why we were filling a prescription there," Donnell says.

Develop Your Strategy Now

The applications used by Northeast, Guaranteed and Donnell exemplify the interest in using wireless technologies to make work more efficient, analysts say. Despite relatively few successes on record, there is payback to be had from wireless projects, and it makes sense to build a strategy, launch small trials and get management buy-in.

"A lot of companies are moving forward at a good, solid pace with wireless projects, both for internal users and consumers, while others are asking if there's a consumer market for wireless," says Carl Zetie, an analyst at Giga Information Group Inc. in Cambridge, Mass.

Wireless applications for warehousing and delivery trucks have been used for years, in some cases, but the movement of wireless to consumers for activities such as trading stocks is a fairly recent phenomenon. Zetie says that even though more than 50 brokerages allow wireless trading, some large brokerages are "waiting in the wings" to see if there really will be a return on investment.

Despite the success stories, some analysts note that there haven't been as many as they'd expected to see after years of promises. "Honestly, there aren't a lot of good, long-term wireless application examples to say whether there are any real successes," says Jack Gold, an analyst at Meta Group Inc. in Westboro, Mass.

Zetie says the measurements are easier to make for internal projects such as wireless LANs that link workgroups in a campus. At Cingular, Zetie says, about 15,000 technicians are each saving as much as an hour each day in making and receiving wireless requests for parts and route information, which he calls a "pretty good ROI." ✦

2001: Another Odyssey for IT

BY PIMM FOX

WELCOME to the real new millennium. Last year was just a proficiency hound's excitement run aground — with Internet access all the rage. This year, we'll really see some change.

The fast lane of connectivity, whether for voice or data, implies the ability to execute business-to-business integration between companies and their vendors. The desire for bandwidth will continue to push a variety of technologies. Copper, twisted-pair, fiber-optic and wireless will offer customers different costs and different IT architectures. And look for a blend of all the different access methods as your workforce gets mobile.

Shucks, you're going to have to snag the best talent — all the time. Missing out on quality IT personnel because you don't have reliable remote access or a solid communications infrastructure can put your operations at a disadvantage. It can also make your company look vulnerable and less attractive; it's better to be known for being the best in your field.

[OPINION]

Each innovation for secure, broadband connections will reveal a host of new problems — and solutions. So be prepared to be nimble. How fast can you add capacity to your IT systems? Is your data center taking full advantage of the Web? Companies that ignore new technologies often get left behind or find it excruciatingly expensive to catch up. Being able to scale solutions in the enterprise is still a key element of IT success.

Of course, you're never going to be completely successful just because the digit in the year changes from a 0 to a 1 doesn't mean we're in another digital Fantasia. No, looking forward, we can honestly say we know our limitations.

We have to go global. New markets mean new laws, new cultures and new local content for Web sites. Those sites will also have to be secure — and will have to conform to all the new privacy legislation that's sure to be on the legislative agenda. New laws already exist in Europe, and if you have any European customers, you're going to have to implement new procedures. It will be good business for security software and service companies.

And security or, rather, the lack of it will be a growing problem: This is the year your conversations will be overheard and your location known. So make sure you have top-notch people you can talk to about IT security.

One answer is to make security part of an overall Web strategy. But keep your strategy simple, and use good business practices to get the right customers to come to your site.

Doing business online should be good business for everyone. That's where the wonderful potential of IT comes in.

For years, IT was seen as a bottom-line item. It could trim costs, help make a company more efficient and more productive and give you a business to run. But as we click over to 2001, this could be the year technology assumes its place above the line. It might be recognized as the driver of revenue, a seamless expression of the wheels of commerce.

The IT manager, unlike any other person in the corporate structure, is his own customer. Successful IT managers and executives have little trouble understanding the importance of customer data, service histories or purchase patterns — the "clickstream" data from their networks and Web sites. They seek out experts who can be the gatherers of this information, giving them time to show the nontechnical people in the enterprise what technology can do for their businesses.

And as they struggle through another migration — to Windows 2000 this time — be patient. Take a big-picture look at how you're going to manage the transition. Will your hardware support it? Is your staff fully trained?

I think Microsoft missed a big opportunity by not calling it "2000: A Windows Odyssey," but this year will surely consist of four quarters of transition, with trial as well as error.

A particular area in which to avoid errors will be anything having to do with the government. Like it or not (and judging by the recent presidential election, many people don't) government action is continuing on almost every front related to technology and IT.

Washington and local lawmakers are very interested in the widespread use of technology inside the workplace. So respond to government requests for comments on regulatory proposals with others in your industry. Don't go it alone.

Remember that politicians seem to always be on the lookout for reasons to put laws into place. I guess it's their job. But we don't have to make it easy for them by having sloppy security, privacy and oversight policies. IT managers can help forestall government action by getting industry associations to take seriously the issues of personal security, privacy and online security.

Finally, 2001 will be the year the New Economy keeps reinventing itself, and when IT managers will have greater power and responsibility than ever before.

Live long and prosper. ◆

Pimm Fox

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2001: Another Odyssey for IT

BY PIMM FOX

WELCOME to the *real* new millennium. Last year was just a publicity hound's excitement run aground — with Internet access all the rage. This year, we'll really see some change.

The fast lane of connectivity, whether for voice or data, implies the ability to execute business-to-business integration between companies and their vendors. The desire for bandwidth will continue to push a variety of technologies: Copper, twisted-pair, fiber-optic and wireless will offer customers different costs and different IT architectures. And look for a blend of all the different access methods as your workforce gets mobile.

Shucks, you're going to have to snag the best talent — all the time. Missing out on quality IT personnel because you don't have reliable remote access or a solid communications infrastructure can put your operations at a disadvantage. It's bad enough if your company look vulnerable and less attractive; it's better to be known for being the best in your field.

[OPINION]

Each innovation for secure, broadband connections will reveal a host of new problems — and solutions. So be prepared to be nimble. How fast can you add capacity to your IT systems? Is your data center taking full advantage of the Web? Companies that ignore new technologies often get left behind or find it excruciatingly expensive to catch up. Being able to scale solutions in the enterprise is still a key element of IT success.

Of course, you're never going to be completely successful. Just because the digit in the year changes from a 0 to a 1 doesn't mean we're in another digital *Fantasia*. No, looking forward, we can honestly say we know our limitations.

We have to go global. New markets mean new laws, new cultures and new local content for Web sites. Those sites will also have to be secure — and will have to conform to all the new privacy legislation that's sure to be on the legislative agenda. New laws already exist in Europe, and if you have any European customers, you're going to have to implement new procedures. It will be good business for security software and service companies.

And security or, rather, the lack of it will be a growing problem: This is the year your conversations will be overheard and your location known. So make sure you have top-notch people you can talk to about IT security.

One answer is to make security part of an overall Web strategy. But keep your strategy simple, and use good business practices to get the right customers to come to your site.

Doing business online should be good business for everyone. That's where the wonderful potential of IT comes in.

For years, IT was seen as a bottom-line item. It could trim costs, help make a company more efficient and more productive and give you a business to run. But as we click over to 2001, this could be the year technology assumes its place above the line. It might be recognized as the driver of revenue, a seamless expression of the wheels of commerce.

The IT manager, unlike any other person in the corporate structure, is his own customer. Successful IT managers and executives have little trouble understanding the importance of customer data, service histories or purchase patterns — the "clickstream" data from their networks and Web sites. They seek out experts who can be the gatherers of this information, giving them time to show the nontechnical people in the enterprise what technology can do for their businesses.

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WORKSTYLES

Hallmark IT Folds Creativity Into Its Business Strategy

Interviewee: Barbara Null, portfolio manager for desktop publishing options. "I support the Hallmark creative and graphics group . . ., including art directors, designers, artists, editors. . . . I'm accountable for the well-being of our product creation systems – making sure that they're aligned strategically with the business."

Company: Hallmark Cards Inc.

Main location: Kansas City, Mo.

Number of IT employees: 700 worldwide; the majority are based in Kansas City

Number of employees (and users): 21,000 worldwide, including 5,700 at headquarters

What it's like supporting designers and artists? "I always say I have the best of all worlds because I love technology and I get to work with current technologies and to explore new ones. But I also get to work with people who create beautiful art. . . , I'm a left-brain person with a strong right-brain influence, so it would be a stretch for me to be in pure IT without the exposure to all the creativity."

What impact does the holiday season have on IT in your group? "I can't think of a time that isn't extremely busy. The design work [on cards, ornaments and other gifts] occurs early on, then we do prototypes and then move into the production cycle. We have different teams launching all throughout the year."

Employee reviews: Annual. "Employees have a lot of input. Sometimes you write your own review and pass it to your manager, who pulls that together with their own review, and then you have a dialogue on what you've completed during the year, how you met your objectives and what new challenges you should pursue for the coming year."

IT bonus programs: "There's a real focus on retaining quality employees in the new organization, and a team is working on

putting a reward system in place as part of that. In the past, there have been spot bonuses in IT for exceptional work, but the definition of that hasn't always been exactly clear. So they are revisiting that to work out a more complete package."

Dress code: "You can find every style of dress imaginable. In IT, we're business casual, keeping in mind that there are occasions when we need more businesslike attire."

Workstyle: "We're really family-oriented, so you don't have to live here to get the job done. It's usually an eight- to nine-hour day. But if people need to stay, they will. An exceptionally long day would be 12 to 14 hours."

Décor: "Displays of Hallmark artwork by our own artists plus museum-quality work by well-known artists like an Andy Warhol and Roy Lichtenstein. Employees are free to decorate their own work spaces."

On-site day care? No.

On-site amenities: Fitness center with weight machines and aerobics classes; Hallmark Square, a courtyard shopping area.

Office mascot: "A huge purple elephant that one of our artists wore as a Halloween costume, and everyone signed it. It's enormous, with 5,000 signatures."

Last companywide/department party: Hallmark night at the Worlds of Fun amusement park in September.

Would employees feel comfortable e-mailing the CEO, Irv Hockaday? "Those with e-mail might feel fine with that . . . He also holds a Town Hall meeting regularly."

What do you like most about working in Hallmark IT? "What we make and what we represent – we help people celebrate special moments. That's a lot to get out of an employer. And in IT, I'm surrounded by the best talent I've ever known."

– *Leslie Goff*
(lgoff@ix.netcom.com)

What It's Like To Work At . . .

JIM CHAMPY

2001: Call Time-Out

THERE'S A CLEAR TREND emerging for this year's IT budgets: They won't increase quite as much as they have in recent years. That means the IT services industry will grow more slowly than its normal breathless rate. Industry analysts predict growth in IT services will be 7% this year. This may be bad news for people in the business, but it's good news for consumers of technology, who need to catch their breath and think for a moment.

There are several reasons for the slowdown. I believe that line business managers – such as CEOs and marketing executives – are uncertain about technology's payoff. Last year's dot-com downturn has managers confused about what the Internet can really do for business. So, pausing for a moment may be the right thing to do.

Also, most major companies last year spent millions, if not tens of millions of dollars, on ERP systems. These companies were expecting a period of relative IT calm after the ERP wave. Now their managers are being told that it's time to Webify those systems and spend more in order to handle the expected surge in e-business.

For the person who approves the IT budget, that may spell danger ahead. He won't want to repeat the ERP experience of unplanned costs and low paybacks. As unfulfilled demands start to build in IT, line managers will continue to be challenged on more traditional fronts: How does the company compete on something other than price? What does it mean to operate globally while understanding that local markets are still important? What about scale and the efficiencies of consolidation – who will buy whom next? Innovation seems to be even more important today, so how can a company continue to generate new ideas?

The old conundrums of business haven't gone away. They've just been intensified by what IT makes possible.

As the new year begins, it might help both line and IT managers to stop separating IT questions from business questions.

Here are three for consideration:

■ Is your company using IT, especially the Internet, to help streamline processes within the organization and reach out to suppliers and customers? You don't have to achieve the technology-enabled operating efficiencies of a Cis-

co Systems, but to compete in the future, you had better come close. The next wave of re-engineering will be cross-company, presenting a huge challenge but also yielding great benefit.

■ How is your company using the Internet to create relationships with customers, suppliers, partners and competitors? It's becoming increasingly clear that new value propositions for customers will be created from new business combinations. You don't have to be as ambitious as GM, Ford and DaimlerChrysler were when they created Covisint, their online marketplace. But you may not have the scale or product variety to go it alone.

■ How can you use IT to create new products and services? The ubiquity of wireless technologies, combined with the Internet, opens vast areas of opportunity. You may not have the resources of, say, Fidelity, to transform how securities are bought and sold, and you may not be able to launch an investment fund in special markets almost instantaneously. But the big guys haven't cornered the market on acceleration and innovation.

These questions are large in scope. They're not the incremental types of questions that appear in typical IT planning cycles, like how much more to spend in this department or on that application. But they are the questions that need to be answered to get a company focused on the real business opportunities behind technology. Until managers are more certain of the answers, they'll be reluctant to spend more. By slowing down and doing some hard thinking, companies will be able to accelerate – intelligently – their technology investments. ●

> *There are several reasons for the slowdown, so pausing may be the right thing to do.*

Champy is chairman of consulting at Perot Systems Corp. in Cambridge, Mass. He can be reached at JimChampy@ps.net.

THE TALENT WAR

In the wake of dot-com tailspins, traditional companies are scrambling to lure back IT talent. The successful ones combine the best of both traditional and e-business worlds. By Emily Leinfuss

B
ILL GODFREY says he's well aware of the need to act fast and sell hard when recruiting a prized IT professional for e-business development. "We hired someone out of a dot-com who had three or four concurrent job offers. He came to our attention on a Monday, and we closed the deal in a week," says Godfrey, who is chief technology officer at Dow Jones & Co. in New York. In the interim, the job candidate "spent time with the chairman of the board, the senior VP of our electronic publishing division and all the people who would be his colleagues, so he could access the vision, the mission and the values of the company."

Finally, the candidate "was attracted by the Dow Jones brand and WSJ.com," Godfrey says. "He wanted to be part of an electronic venture that had a lot of momentum within a brick-and-mortar company"

So, too, do a lot of other IT professionals, who are increasingly jumping back from dot-coms to traditional companies. But they're not looking at just any companies; they prefer those with a strong electronic presence. Call it the best of both worlds.

Back to Bricks and Mortar

In the wake of dot-com tailspins, IT professionals are finding that larger, traditional companies have several positive traits, including the benefits of scale, greater bench strength, more career paths and larger budgets as well as technology challenges.

"Any brick-and-mortar with a significant dot-com presence is a hot commodity," confirms Barbara Gomolski, research director at Gartner Institute in Fallbrook, Calif. "IT professionals are no longer so anxious to jump ship for a dot-com, and dot-coms will be less of a factor in the IT staffing picture this coming year."

That isn't to say that dot-coms haven't had a lasting effect on the job outlook. "They have essentially upped the ante for how IT professionals want to be treated in terms of flexibility, perks and rewards," she says.

Cash Is King

When it comes to compensation, cash is king this year, says Godfrey. "Stock options mean far less, and candidates want more up front," Godfrey says. "Most candidates are caring more for their first year W-2 than they are about getting equity."

And why not? Technology professionals are no longer thinking about long-term careers with a single company. So the here and now (cash) is much more attractive than the future promise that stock options hold.

When it comes to the amount of cash that managers will be shelling out, top IT wage earners this year will

be "those good ol' Oracle DBAs," says Gomolski. Other highly paid fields will include security, IT architecture, project management, Web development and Unix administration, she says.

But looking for qualified IT staff is not about technology alone, says Bill O'Neill, senior vice president of human resources at Getty Images Inc., a Seattle-based visual content provider.

Getty is looking for Oracle database administrators, Unix administrators, Internet developers and e-commerce project leaders. But "it comes down to being able to have the technical skill level and transform that into business reality," says O'Neill. "The ability to prioritize projects, deliver on time and get it out to customers — that is key for us."

Paying More for Talent

Hiring managers can also expect to pay signing bonuses to lower-level IT professionals, says Frank Giannantonio, vice president of direct marketing systems at Limited Technology Services, the technology arm of the retail company The Limited Inc. in Columbus, Ohio. These bonuses will be largely project-related rather than based on salary, he says.

Giannantonio says he would pay sign-on bonuses to find qualified candidates at any level but can most easily justify doing so if the candidate has strong experience in various systems disciplines. That, combined with the energy and skills for electronic retailing, would make for a very strong candidate. "We have an online transaction environment that requires cross-checks, stress-testing — disciplines that are inherent in the development process," he says.

Godfrey says he's also noticed that more employers are willing to offer sign-on bonuses — and more candidates are expecting them. The combination of those two trends has resulted in workers often asking for much more than their experience justifies.

And the candidates are getting away with it. Godfrey says he'll hire someone who is a little too "junior" for more pay if the candidate has an attitude that fits with company values and a promising profile.

"If someone has the values and the competencies but is a little light on skills, that is where you compromise. You take a bet. You have pressure to fill the job, and you think someone fits 80% of the profile and you make a leap of faith," Godfrey says.

The need for a cultural fit works both ways. Godfrey says he sees plenty of IT résumés, but he only hires well-rounded people who fit the company and its values.

Dow Jones has an average of 50 to 70

IT openings at any time and is currently looking for database administrators (DBA), project leaders, application architects with expertise in high-volume Web platforms, network engineers, security engineers and Windows NT systems administrators.

Creative Alternatives

The tight job market is forcing employers to pay more attention to retention programs, training and the culture and environment they offer workers.

That is certainly true at TRW Inc. in Cleveland, where vice president and CIO Montosh Mehrabani says his philosophy is, "We don't ever want people to leave the company, or choose another company, because of compensation."

TRW also puts priority on job satisfaction and career development. Mehrabani recently took his company's top 50 IT professionals to a customized weeklong program at MIT's Sloan School of Management. "We need IT professionals to be more than technicians. They need to be good process experts, have a passion for business and offer leadership," he says.

The tight job market is also forcing IT employers to rely more heavily on hiring foreign workers and outsourcing. For example, TRW just signed a $200 million, five-year agreement with Saryam Computer Services Ltd. in Hyderabad, India, for systems development and system engineering support, he says.

"We are creating an electronic business community where we provide core and strategic IT capabilities and

services in-house and rely on strategic partners to develop other functions," says Mehrabani.

O'Neill says Getty Images is getting more creative in terms of putting together global workgroups.

"We have IT employees all over the globe — Sydney, London, Calgary," he says. "We don't believe they have to be in a central location."

Getting a Life Back

In response to long hours, high stress and mounting responsibilities, IT professionals this year will be demanding more flexible work arrangements, predicts John Keast, co-founder and CEO of business-to-business market development firm Tinavo in Palo Alto, Calif., and former CIO at PG&E Corp. in San Francisco.

"There is this morning-after feeling from what has been going on with the dot-coms, and the balance between work and play is going to become much more important," Keast says. "People have made phenomenal personal and financial sacrifices. They have stretched the work/home balance and are in a net loss situation, and it is going to be payback time for the family."

Keast says he's practicing what he preaches. After earning a solid reputation as always being the first to arrive at work, he's now taking his daughter to school a couple of mornings a week. And he's trying not to schedule late-hour work sessions at the end of the day, so he and his staff can go home and have dinner with their families. ∎

Leinfuss is a freelance writer in Sarasota, Fla.

HOT JOBS FOR 2001

Technical recruiters and IT hiring managers say this year's top fields for IT job opportunities, ranked according to demand for workers, will include the following:

Systems integration/application systems: Requires a strong understanding of the behavior of multiple systems as well as knowledge of the middleware involved in integration. — Montosh Mehrabani, vice president and CIO at TRW
Salary range: $70,000 to $140,000

E-business architecture: People in this field need a working knowledge of Web tools and technologies, and most important, the ability to look at the big picture and develop the high-level planning and

thinking to frame the problems and the solutions. — John Keast, CEO of Tinavo
Salary range: $75,000 to $175,000

Customer relationship management: Requires people who can capture customer information and build databases. They must have programming and data modeling skills as well as the business knowledge necessary to understand why they are capturing the information. — Frank Giannantonio, vice president of direct marketing systems at Limited Technology Services
Salary range: $75,000 to $100,000

Wireless technology: Offers opportunities for people who can do wireless application development, build wireless networking infrastructures or manage all the wireless personal digital assistants that will one day become part of the corporate network. — Barbara Gomolski, research director at the Gartner Institute
Salary range: Vary; are in high demand

Security: Security is high because IT professionals with the required skills are scarce.

WEB

IT consultants with Web application development experience under their belts will be sitting pretty this year, as the demand for their talents increases dramatically. By Leslie Goff

FEARING THAT HE COULD BE in store for a dry year, independent consultant Don Wallace took two months off at the end of this past year to reposition his practice and refocus his skills.

Based in Lebanon, Ohio, near Cincinnati, Wallace has kept busy the past few years doing Delphi and C++ development work. When his last project came to an end, he took a hard look at where he was headed.

Wallace reckoned he could drum up sufficient Delphi- and C++-related work, especially by going to repeat clients. But he concluded that he should upgrade his skills before the day came that he was completely obsolete.

"I've realized that I'm not on top of a hot technology that everyone is using,"

Wallace says. "I'm hoping to find an opportunity to leverage my current background in C++ but learn Internet development and Java."

Wallace is adjusting his 2001 rates as part of his strategy to land such an opportunity. He'll charge clients who seek his bread-and-butter skills his usual rates, but if a gig offers the immediate prospect of learning Java on the job, he'll negotiate a temporary rate 20% to 30% lower as a concession to his learning curve, he explains.

Wallace's retooling and his corresponding pricing strategy reflects where consultants see the big money in contract gigs in 2001. Although they expect far fewer opportunities with dot-com start-ups due to the demise of

ANNUAL HIRING FORECAST

pure-play e-commerce ventures, they anticipate that Web-based development will continue to dominate the higher-paying opportunities in the next year.

Consultants who can jump into Web-enabled customer relationship management (CRM) and supply-chain management system projects will take the lion's share in 2001, according to independent consultants, agency recruiters and market research firms. Technical expertise in data warehouses, Oracle Corp. applications, server-side Java, XML and CRM packages coupled with functional experience will bring top dollar.

Consultants who have already gained Web-based development experience are setting their sights on higher fees

in 2001. For example, Tom Scott, sole proprietor of Scott Consulting Inc. in Encinitas, Calif., plans to raise his rates by 30% this year. His justification for the increase is based in part on the fact that he has gained Oracle Internet Application Server skills.

Like Wallace, Scott at one time was a Delphi developer. Three years ago, he turned his attention to learning Oracle. In 2000, he says, he moved to webify his database skills in anticipation of a boom in CRM-related data warehousing and data mining projects.

Trading on functional experience definitely pays more per hour than technical expertise, notes Walt Sloan, principal of The System Smith in New York, who has been a consultant for 29 years. Sloan, who specializes in developing financial applications in Visual

BUSINESS CONSULTING

Predicting where the consulting market will be richest is like predicting snowfall in January. There's sure to be a windfall, but no one knows where. Demand will stay high, but dot-com flameouts may flood the market with laid-off techs. By Leslie Goff

AS THE END OF 2000 approached with doubt as to who would be occupying the White House, consultants said they were optimistic about demand for their services lo 2001 but prepared for the possibility that an unstable administration in Washington could create an uncertain economy.

Without a doubt, Web-enabled customer relationship management (CRM) and supply-chain management systems will dominate application development opportunities, consultants say. Wireless applications will also play a significant role in consulting demand.

Overall, consultants say they expect demand to continue to be high, but with the demise of many dot-coms, job competition should increase as well.

"Predicting the demand next year is almost like predicting the Florida election," says Marc Nolan, president and chief operating officer at IT consulting agency VAS International Inc. in Woodstock, Ga. "We did a survey six months ago and found a 0.04% unemployment rate among consultants in the high end."

VAS defines the high end as consultants who earn $75 and more per hour and combine "business logic with technical know-how."

Nolan and others say they anticipate continued work for such high-end consultants, but those providing only technical expertise, such as systems and network administrators, may have an uphill battle this year as companies turn to less expensive H-IB visa holders and application service providers to handle those tasks.

Whereas dot-com companies were throwing money at consultants like nobody's business last year, demand in that sector will all but cease — and consultants will likely be wary of those gigs anyway, they say.

One independent consultant, who asked oot to be identified, says his agency was stiffed for six-figure fees by one dot-com that tanked.

Nonetheless, Web-driven application development and integration of Web-based systems with legacy systems should sustain a healthy independent consulting market, especially in midtier companies, notes Jerry Miller, president of Crescuendo Technologies Group LLC, an IT strategy and consulting firm in Alpharetta, Ga.

Miller says he expects a 20% to 30% boost in demand among midtier companies with revenue ranging from $200 million to $2 billion, and "a lot of the growth we expect in the next few years is being driven by the wireless arena."

Hot technology skills for consultants in 2001 include Java, Oracle, XML, Wireless Application Protocol and niche packages in the CRM and supply-chain management arenas, such as the software of I2 Technologies Inc in Dallas.

Not surprisingly, demand for mainframe skills should be low. But functional expertise and soft skills are more important than technical skills, agency recruiters say.

To remain marketable, say consultants and agency recruiters, independent consultants will need to hone their marketing and networking skills this year. "Traditionally, most of the tech people I see possess some arrogance when they walk onto an engagement," Nolan says. "They have a sharper edge, and it's imperative to get some soft skills." Those skills will be key to landing repeat and word-of-mouth business, which will be critical if the economy goes south, Nolan explains.

Even if the economy does cool, consultants with strategic functional expertise in CRM and supply-chain management should fare well, says Joe Higgins, general manager at Nemeth/Martin Consulting Inc. in Danbury, Conn. The IT supply-and-demand gap will continue to play in consultants' favor.

"I don't think that would have a big impact, because if companies want to stay competitive and prepared for the future, they still need to pursue these projects. And they'll need consultants, because they won't be able to find the talent full time," Higgins says. "They can use consultants and then have that high ticket go away."

Goff is a freelance writer in New York.

> If companies want to stay competitive and prepared for the future . . . they'll need consultants because they won't be able to find the talent full-time. They can use consultants and then have that high ticket go away.
>
> **JOE HIGGINS, GENERAL MANAGER, NEMETH/MARTIN CONSULTING**

Basic, raised his rates by 25% last spring and plans a 15% to 20% increase in 2001. Nonetheless, he says, his rates are lower now than five years ago when he ran a specialized consultancy selling accounting software.

"Then, I was banking on my business analysis skills," Sloan explains. "I was billing out at $150 to $200 an hour, but my part of the project was only 5% to 10% of the total, and my developers were doing the rest."

Sloan says he folded that company because he was burned out on the business side and found he prefers focusing on technology. Now, even though he charges less, he brings in a higher gross because he gets more billable hours.

Goff is a freelance writer in New York.

SUREFIRE UNCERTAINTIES

Laptop U

Strategic use of technology has transformed a small North Dakota university into an education pioneer. By Kathleen Melymuka

VALLEY CITY, N.D. — A student teacher studying at Valley City State University (VCSU) took her class of elementary students to a computer lab at their school. When she found that the computers weren't working, she spent the next two hours fixing them.

A recent VCSU graduate found herself giving a technology tutorial to a grateful job interviewer. An English major was snapped up as a Web designer. A physical education major who interviewed for a teaching position was also offered a job as the school district's technology coordinator.

The students' IT skills are the result of a radical transformation at VCSU, a small liberal arts college. "They have actually re-engineered their enterprise around IT," says Mark Luker, vice president of Educause, a nonprofit associa-

tion in Washington that works to increase technology use in higher education. "They have elevated IT and Internet-based education to the top of their campus strategic plan."

The result is a model for education — and business — of how the strategic use of technology can improve processes (teaching), boost the quality of products (graduates), reinvigorate employees (teachers and staff), tighten relationships with customers (prospective employers of graduates), forge links with the community and ultimately transform the organization.

It all began in the early 1990s, when the small college was facing a 25% drop in the number of seniors coming out of state high schools.

"We needed to differentiate ourselves big time," says VCSU President Ellen Chaffee. "We needed a strategic advantage." The university decided to become a pioneer in the instructional use of technology. Today, it's one of the most wired colleges in the U.S.,

and that has changed everything.

Surrounded by miles of some of the richest farmland in the world, the red brick spires of VCSU's campus contrast with the flat landscape of southeastern North Dakota. Even greater is the contrast between the Victorian buildings — replete with antique ornamentation — and what they house: a "laptop university" with ubiquitous computing, at which the strategic use of IT has become second nature to everyone on campus, from faculty and students to coaches and groundskeepers. "It's like brushing your teeth," says Les Wong, vice president for academic affairs.

It wasn't easy. VCSU CIO Joe Tykwinski recalls that by 1995, the teachers had several years of technology training by virtue of a grant from the Bush Foundation in St. Paul, Minn., which provides faculty development awards to area colleges.

VCSU was bursting with ideas that had nowhere to go because the hodgepodge of technology on campus was

BUSINESS

unworkable. There were obsolete Macintoshes and PCs, different versions of various operating systems, and all kinds of academic and administrative software. There were three computer labs, several piecemeal networks, numerous e-mail systems and no Internet connections.

"The current model would not support the kinds of things the faculty wanted to do," Tykwinski says. The university knew that the answer was to overhaul the entire infrastructure.

But there were huge monetary obstacles. North Dakota ranks 49th among the 50 states in per-capita spending per pupil in higher education, and there was no new money. The only way to finance the ubiquitous computing initiative was to shuffle priorities, reallocate funds internally and win additional grants.

And because VCSU was only the second university to "go laptop" — the first was the University of Minnesota at Crookston — "we had to invent almost every decision as we went along," Chaffee says, "and we could only go on faith that it would be worth doing." More than 30 universities have since followed VCSU's lead.

The university also had to believe that students would come. There was no way around charging a $950-per-student laptop fee, which would raise the cost of attending the school by nearly 50% for a community without a cent to spare. Chaffee knew that the fee could decimate enrollment, but there was no alternative. She held her breath and, remarkably, enrollment didn't fall.

Re-engineering the Classroom

By 1996, virtually every classroom, public area and dorm room had been wired, providing universal access to a standard platform that includes the campus network, the Internet and a host of peripherals, from big-screen TVs to microscopes. Every student and teacher received an IBM ThinkPad.

Like businesspeople who re-engineer processes to take advantage of new technology, VCSU faculty members had to rethink how they taught. Like many innovations, the technology initiative slowed down processes in the beginning, as teachers saw class time eaten up by technology instruction and minor snafus. But things began to gel, and the results have been revolutionary, if sometimes unexpected.

Linda Whitney, an associate professor of art, recalls how early technical problems changed classroom dynamics as teachers and students worked together to get it right. "It became more of a partnership, as opposed to 'I'm the expert; you're the learner,'" she says.

Dianne Wood, an associate professor of business, says her textbooks have been replaced by the *Sloan Management Review* and *The Wall Street Journal Interactive Edition*. "They don't have to read case studies secondhand," she explains. "They're using the actual references to write their own."

Instructor Jane Hammer, who learned programming by copying code off a blackboard and going to a computer lab once a week to see it run, now has her computer information systems (CIS) students type code into their laptops as she talks, "to see whether what I said really works."

"My Islamic art students can travel through the Dome of the Rock and hear the music and language all at once" on a Web site, says Whitney. "I teach people to make Web pages, and in every section, I have someone who says, 'Now I have power!'"

Nearly half the courses are taught, at least in part, over the Web. Wood's class in entrepreneurship, for example, meets online half the time. Students are divided into groups of four and interact on discussion boards between weekly classes.

"It's not a traditional lecture/research/write format," says senior Maggie Clemens, who is majoring in English and business. "It's more of a discussion: How can we all learn together?"

While many universities are using IT in class instruction, says Luker, the technology is usually scattered in islands that may not communicate with one another, much like the IT "silos" still found at many companies. VCSU is different, he says, because IT is "a structured, strategic emphasis that runs throughout the organization," just as it should be in the best companies.

Students at VCSU say that technology enables better education for all types of pupils. "Classes that would traditionally be lecture are turning into audiovisual and hands-on, which takes in all types of learners — visual, auditory and kinetic," says Sara Banya, a history major. Her class recently listened to a lesser-known speech by Martin Luther King Jr. via the Web. "Primary sources are within our grasp," she says. "It makes history tangible."

VCSU is also using technology to improve student skills assessment by means of mandatory "digital portfolios" — CDs that leverage students' technical proficiency to illustrate their mastery of academic subject matter.

A digital portfolio for an education major, for example, might include a Web page with a video of the student teacher giving a lesson, a video of his students working on a project with a voice-over explanation of the principles involved, a Word document of the lesson plan with hot links to sources, a testimonial by the supervising teacher, and the student's transcript. "It says I know more than what's on my transcript," says senior Ben Bernard.

Seeing Results

Thanks to its two-year computer replacement cycle, VCSU students graduate with computer experience that's equal to or greater than that of their employers, says Chaffee. "Our graduate job placement rate is consistently at or near 100%," she says.

The university works hard to ensure that rate. It has established internships with Great Plains Software Inc. and uses the company's products in its business and CIS classes.

"When we interview a VCSU student, we don't focus on technology, because we know they know it," says Gary Schaefer, vice president for customer relations at the Fargo, N.D.-based software maker. "It would be interesting to measure the training costs we've saved hiring Valley City students."

Teachers add that their use of technology tools helps set the stage for lifelong learning, and the university provides many examples. Everyone from administrators to security guards has received technology training, and everyone has access to a PC.

Ron Pomarenke, director of facilities services, has just begun computer-aided design training for his staffers, which will help them maintain the physical plant. Don Schaack, the university carpenter, shares a PC with facilities services, but he says he hopes that won't be for long. "The more I learn, the more I want to learn," he says. "I'd like to have my own laptop."

Chaffee says her ultimate goal is to bring technology-oriented business into the region and stop the outflow of talent that's threatening a way of life she feels is worth saving.

"Around here, we say, 'Better leave the keys in the pickup. Somebody might need it,'" she laughs. Gesturing toward the small town beyond the campus and the farms in the distance, she adds, "This is the way America is supposed to be." 9

KOZMO.COM INC., the on-line convenience store that promises delivery of products to urban consumers within an hour, had been a dot-com darling since its founding in 1997 [Business, March 6, 2000]. Private investments from venture capital firms and Amazon.com Inc. were reported at $268 million. Meanwhile, New York-based Jupiter Research projected that the home-delivery market would reach $3.5 billion in 2000. A major deal with Seattle-based Starbucks Corp. put a Kozmo brand presence in many of the popular coffee shops, and the online store expanded operations from its New York headquarters to 10 other cities.

Then last spring, reality hit the stock market and troubles piled up for Kozmo, including the following:

- A high-profile CIO left two months after arriving.
- The CEO turned over daily operations to the chief financial officer.
- Hundreds of employees received pink slips.
- Sales in 1999 of $3.5 million didn't cover $26 million in losses.
- Plans for further expansion were put on hold.
- Analysts challenged its business model.

Delivering an initial public offering (IPO) — which was delayed, then canceled — proved a greater strain than bicycling through midtown Manhattan with a box of doughnuts. As Chris Siraguss, Kozmo's group vice president of technology, puts it, the rules suddenly changed. "Unfortunately, you have to play by [the market's] rules," he says.

Were initial investors and onlookers foolish or simply caught by bad timing?

"I wouldn't be betting on [Kozmo]," says Tim Laseter, vice president in the operations practice at consultancy Booz Allen & Hamilton Inc. in McLean, Va. "There are some big economic challenges in the business concept of same-day delivery." Deliveries are expensive to perform, so orders must be large enough — with high enough margins — to cover the costs and ultimately provide profit, he adds.

MISUNDERSTOOD?

Kozmo can't leverage technology to the same extent as companies such as Amazon.com and Walmart.com, the online unit of Wal-Mart Stores Inc., says Greg Kyle, president and CEO of Pegasus Research International LLC in New York. That's because as its business grows online, it must hire more people to deliver goods in the real world. "The more customers they acquire, the more deliveries they make, [and] the higher their costs go," he says.

Jim Trevathan, Kozmo's chief operating officer and former managing

KOZMO.COM'S Chairman and former CEO Joseph Park, right, and Chief Operating Officer Skip Trevathan have been weathering challenging times since last winter.

FALLING DOT-COM STAR

Online convenience store Kozmo.com hasn't had an easy year since raising millions in venture capital, thanks to stock market woes and executive changes. But give us time, the company says. By Erik Sherman

director of North American logistics at Memphis-based FedEx Corp., says many observers don't understand Kozmo's business mechanics. Most delivery scheduling and routing improvements are done used by FedEx and UPS — assume a 12- to 24-hour window between order placement and actual delivery. In contrast, Kozmo has just five to seven minutes to pinpoint the delivery round (a bicycle trip with Kozmo products) that will carry an order. The tight requirements also offer opportunities for logistics systems that can balance delivery loads, expected vehicle traffic and weather conditions, he says.

"There is a point that technology will reach its optimum efficiency gains," says Trevathan. "We are [a] long, long way away from even ap-

proaching . . . that." Since going live last year with systems developed in-house, orders per delivery have climbed from a little more than one to about 2.3, he adds. In fact, 275 delivery and warehouse workers were laid off because the company was able to reduce staff and consolidate warehouses in Los Angeles and New York while deliveries continued to increase.

"What we did was nothing more than what mature businesses would call rightsizing," says Trevathan. Yet scrutiny continues. Delivery efficiencies don't explain later layoffs of several dozen employees from company headquarters. Kozmo was involved in talks to acquire a former rival, New York-based Urbanfetch.com Inc., but dropped the plans after months of on-again/off-again negotiations. A lawsuit alleging discrimination in its delivery services in Washington was dismissed.

In today's market, investors, banks and analysts have little patience for e-businesses. "There was a euphoria and feeding frenzy [in the market] that went on for about two and a half or three years. All of a sudden, it was like waking up from a bad drunk," says Trevathan. He insists that investors, management and employees are still committed and that Kozmo will be profitable in two to four of its most established markets sometime this year.

PROFITABILITY IN SIGHT?

The final arbiter of success is likely how quickly Kozmo can become profitable and whether management can conserve cash well enough to last until then. Kyle says he sees little chance of an IPO anytime soon. "To really be a sustainable public company, they should be able to demonstrate several hundred million dollars in sales for a long-term, successful model," he says. "It's doubtful whether you have that opportunity here in the U.S."

Bob Greene, a managing partner at New York-based Flatiron Partners, one of Kozmo's investors, says he disagrees. "It's in its early days and, I suspect, will come up with a model that works in lots of different kinds of markets just in the U.S. itself," he says. For example, the company might cover some suburbs with once- or twice-daily deliveries to extend its reach. He also points out that this month, Kozmo is adding a $2 delivery charge for each order below the $25 to $30 range. The fee is expected to raise $20 million to $25 million and will remain in effect until the company becomes profitable.

Trevathan says he remains confident. "I didn't move from Memphis, Tenn., to Manhattan thinking I would be done in six months," he says. ◆

Sherman is a freelance writer in Marshfield, Mass. Contact him at esherman@reporters.net.

Business Process Outsourcing

DEFINITION

Business process outsourcing occurs when an organization turns over the management and optimization of a business function, such as accounts payable or purchasing, to a third party that conducts the activities based on a set of predetermined performance metrics.

BY JULEKHA DASH

MANY IT professionals are familiar with the term *business process outsourcing* (BPO), but knowing how to distinguish it from other types of outsourcing requires some scrutiny — somewhat like discerning between two political candidates with similar campaign messages.

Though some forms of BPO may include both IT management and business operations, the approach is primarily about turning over functions such as payroll, accounting, billing or even real estate management to a third party.

Though these business processes may depend on IT, they are separate functions from core IT operations, such as data center activities or network management.

Different Skill Sets

David Schmitt, CEO of Ledgent Inc., a finance and human resources outsourcing provider in Torrance, Calif., says the skills required to manage technology are different from those needed to manage business processes. An IT outsourcer focuses on IT life cycle management and PC uptime, whereas a BPO vendor manages people and processes.

That's why vendors "pay strong attention to employee transitioning" when they manage a firm's business processes, says Rebecca Scholl, an analyst at Dataquest in San Jose. "A vendor should have a strategy for the people [it's] replacing, a change-management strategy," she says.

The same holds true for the customer company. For instance, Charlotte, N.C.-based Bank of America Corp. appointed Mary Lou Cagle to head its business transformation efforts when it signed a memorandum of understanding with Irvine, Calif.-based Exult Inc. last October to manage the bank's accounts payable and human resources activities under a 10-year, $1 billion agreement.

Part of Cagle's responsibilities involves putting together a team including representatives from both the bank and the outsourcing firm.

As evidenced by Bank of America's contract with Exult, BPO is big business — and getting bigger. According to Dataquest, the worldwide BPO market is expected to triple by 2004, reaching $301 billion.

It's important for companies to recognize their core competencies compared with activities that could be handled more efficiently by a third party, says Charles Kafoglin, a partner at PricewaterhouseCoopers in New York.

For example, back-office functions such as payroll or accounts receivables aren't likely to "make or break" a company, so it might make sense to farm them out if someone else can support them more effectively, says Kafoglin.

Mark Hodges, vice president of corporate development at Exult, says that Global 500 firms spend between $50 million and $100 million per year in a typical BPO deal.

Hard to Quantify Savings

Quantifying savings from BPO deals can be difficult, according to Albert Nekimken, an analyst at Input in Chantilly, Va. More often, companies outsource to streamline processes, save time or leverage the strength of third-party specialists. If a company does find savings, they're usually in the 10% to 15% range, he says.

Scholl says small companies choose to outsource business processes to cut costs and build a function like accounts receivables in a short time. "They need a back office cheaply and fast," she says.

Large companies, on the other hand, traditionally choose BPO to improve their efficiencies, says Scholl. Bank of America, for instance, is hoping that Exult will streamline its human resources function by creating a self-service portal for the bank's 150,000 employees during the next 18 months, according to Cagle.

Self-service human resources applications enable employees to access and update their personnel and benefits information online without having to involve human resources staff. Officials at the $672 billion bank say they expect the deal to cut its annual human resources and accounts payable costs by 10%.

Certain trends may prompt firms within a given industry to outsource business processes, says Nekimken. For instance, consolidation within the banking industry may make it easier for a bank to outsource its human resources activities rather than integrate data from the parties with which it merged or acquired.

Strategic Outsourcing

A company's decision to outsource a business process typically supports a larger business strategy, says Nekimken. For example, prior to announcing its BPO deal with Exult, Bank of America had announced a corporate restructuring, including plans to lay off as many as 10,000 employees and expand its investments in three technology areas.
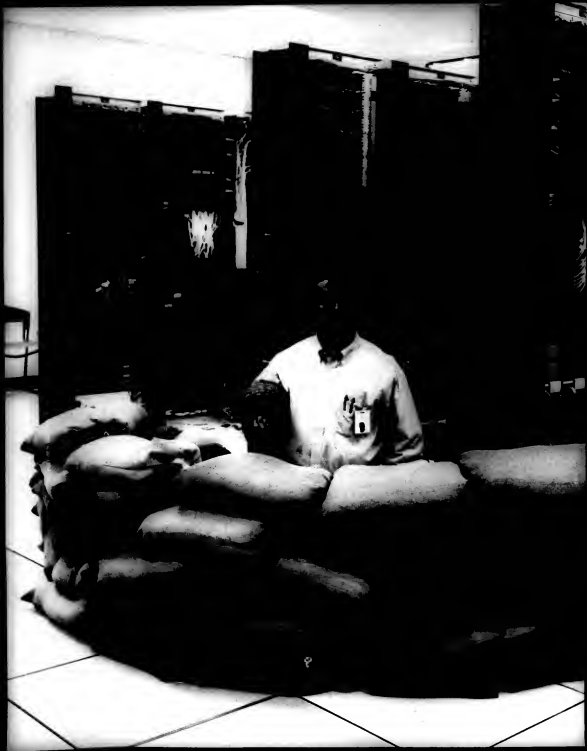
As the bank continues to restructure, outsourcing and Web-enabling its human resources should give it added flexibility, says Nekimken. ▶

Examples of Business Process Outsourcing Deals

DATE	PARTNERS	TERMS OF THE DEAL
October 2000	Exult, Bank of America	Companies are still negotiating a $1 billion, 10-year deal. Bank of America will acquire 5 million shares of Exult stock and an option to purchase another 5 million shares. About 800 to 900 of the 1,000 people working in the bank's human resources department will have jobs at Exult.
April 2000	Nortel Networks, PricewaterhouseCoopers	PricewaterhouseCoopers manages payroll, human resources, accounts payable, employee training and other operations in a five-year deal for an undisclosed amount. About 1,000 Nortel Networks' employees were transferred to PricewaterhouseCoopers' BPO service centers.
November 1998	General Motors, Arthur Andersen	Arthur Andersen was awarded a $250 million deal to manage administrative accounting duties and help GM upgrade its legacy payroll system to PeopleSoft Human Resources. Four hundred GM employees were given the option of working at an Arthur Andersen service center.
November 1998	BP Amoco, PricewaterhouseCoopers	BP and PricewaterhouseCoopers signed a $1.1 billion, 10-year deal to outsource accounting and SAP financials; the consulting firm also acquired BP's application systems group. About 1,200 BP employees joined PricewaterhouseCoopers.

SOURCE: COMPANY INFORMATION

■ Are there business terms you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com.

BUSINESS

Before Saying 'I Do,' Think About Divorce

CONTRACT NEGOTIATIONS SHOULD BE forward-looking by nature. As two parties contemplate beginning a business relationship or extending an existing one, they usually spend adequate time anticipating future events and defining the parties' specific rights and obligations at that time and under present circumstances. But there's often little thought given to what will happen when the relationship ends. Focusing readily on the honeymoon can lead to unpleasant surprises later when the relationship draws to a close — even if it has been fairly good.

In many agreements, the IT vendor agrees to provide some sort of transition services when the contract expires or is terminated early. The description of these transition services is often vague and full of such phrases as "to be mutually determined." Such words are obviously drafted under the assumption that all is well and that both parties will have the same objectives at the end of the contract. But one thing you won't have for sure during the unwinding of the deal is an outgoing power.

Lest we forget, customers are especially vulnerable when they agree to place themselves in dependent relationships with vendors that are trying to maximize their profits if customers express a desire to do so.

From the vendor's perspective and client's perspective, all this may not feel terrible nor committed to very little. You accept such expenses as subject to contract terminal tantrums and risk in a dependent relationship at every extreme of time — when you could be changing vendors or bringing an onerous of transition back in house.

Don't forget: When you're about to become a former customer, vendors seem to lack enthusiasm and an incentive to make you whole and happy.

Of course, the best available approach is to invest on a well-defined exit strategy as part of the contract. The best time to negotiate how a relationship will end is before it begins.

Insist on an exit plan in any negotiations with your potential suppliers.

when you still have negotiating power and vendors are still trying to accommodate your wishes. Obviously, your vendor is most likely to agree to a favorable exit plan for you when it's trying to win your

business — not when it's losing it. Always insist on an exit plan in any negotiations with your potential suppliers. Revardless of the exit circumstances, such a normal convenient termination for convenience, a smooth transition plan should be a negotiation priority.

A well-negotiated transition should describe the conditions under which the exit plan is to be implemented, along with each party's duties, roles and responsibilities. All costs that are to be shouldered by either party should be clearly identified and quantified in as much detail as possible. Do neglsingling of everything should be clearly delineated. Some of the ownership issues are obvious, but some, like data, system modifications and improvements, subcontractor relationships and magnetic storage media often get overlooked.

In deals that require a substantial vendor investment at the outset, such as leasing and outsourcing transactions, it's fair and reasonable for the vendor to expect some compensation with early termination.

JOE MCKENDRICK is president of International Computer Negotiations Inc. (www.dobetterdeals.com), a White Plains, N.Y.-based consultancy that educates users on high-tech procurement. ICN also runs CAUCUS: The Association of High Tech Acquisition Professionals. Contact him at joem@dobetterdeals.com.

may. Many vendors try to require customers to make remaining payments when they want out of deals early. But you don't have to do that. Negotiate a descending termination penalty clause that states that the amount you must pay to get out of the deal declines with each passing month. Negotiate aggressively in these charges before signing the contract — that's sure only chance.

You may never need to exercise this option, but if you do it could save you millions of dollars.

The exit plan should also identify how any changes can be made once business conditions mandate a change once you forecast change. Periodic reviews of the exit plan should be part of the relationship manager's responsibilities — for the customer and the vendor.

While the exit plan doesn't need to be overly complex, it must address the key issues of who will do what and when, plus the costs involved. Without an exit plan, the euphoria of establishing a new relationship can turn into chaos when it comes time to part company.

BRIEFS

Exchange Taps CEO

Kent Dolby has been named president and CEO of Elemica, an online marketplace founded by several large chemical companies. Dolby is a 28-year veteran of Andersen Consulting in Chicago and recently served as president and CEO of PaperExchange.com Inc. in Boston.

Wire Service Teams With Hewlett-Packard

NTT DoCoMo Inc., a Tokyo-based wired and wireless carrier, announced a joint research effort with Hewlett-Packard Co. last month to provide multimedia content and eth-

or applications over fourth-generation wireless networks that the companies are calling MOTO-Media.

Third-generation networks, which projected bandwidth of 370K bit/sec., are still years away in the U.S., although such speeds might be available this year in Japan. Also, where NTT DoCoMo offers i-mode wireless Internet service. Fourth-generation wireless is expected to roll out in 2010.

Microsoft VP Moves To Special Projects

Microsoft Corp. Senior Vice President Joachim Kempin will leave his job managing the company's Windows OEM division and on July 1 will begin overseeing special projects for Microsoft CEO Steve Ballmer. Kempin, who has worked

at Microsoft for 17 years, was a key witness during the U.S. government's antitrust suit against Microsoft. Richard Roy has been tapped to fill Kempin's old position. Roy, who has been at Microsoft since 1997, is currently general manager of Microsoft's German subsidiary.

FedEx CIO Carter Joins Asera's Board

Robert Carter, executive vice president and CIO at FedEx Corp. in Memphis, has joined Asera Inc.'s board of directors. Belmont, Calif.-based Asera is a provider of e-business services and products. Carter joins a board that was expanded last month with the addition of former Oracle Corp. President Ray Lane.

SNAPSHOT

Closed for Business

More than 130 dot-coms went out of business in 2000, according to Webmergers.com-based Webmergers Inc., an online marketplace for buyers and sellers of Web properties. In fact, 43 shut down in October and November. Following are the top reasons why customers stop visiting Web sites, according to WebMergers.com:

- Difficulty accessing/navigating site
- Slow site performance
- Web site down
- Inadequate online customer service
- Slow or no response to e-mail inquiries
- Lengthy or complicated product-return process
- Negative experiences of friends or family

JOE AUER/DRIVING THE DEAL

Before Saying 'I Do,' Think About Divorce

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Lest we forget, customers are especially vulnerable when they agree to place themselves in dependent relationships with vendors that are trying to maximize their profits at customers' expense.

From the vendor's perspective, end-game vagueness is an ally because it leaves the vendor committed to very little. If you accept such vagueness, you subject yourself to uncertainty and risk in a dependent relationship at a very critical time — when you could be changing vendors or bringing an outsourced function back in-house.

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Without an exit plan, the euphoria of establishing a new relationship can turn into chaos when it comes time to part company. ◼

Joe Auer is president of International Computer Negotiations Inc. (www.dobetterdeals.com), a Winter Park, Fla. consultancy that educates users on high-tech procurement. ICN sponsors CAUCUS: The Association of High-Tech Acquisition Professionals. Contact him at joeauer@dobetterdeals.com.

TECHNOLOGY

ALTHOUGH SECURITY GAPS on the wireless side remain a constant threat, Prem Uppaluru of international GTE, inc. and Mark of Schwab, says, ...

SECURITY IN THE WIRELESS WORLD

AS MORE USERS carry wireless devices and demand access to corporate networks and e-commerce sites, security is becoming a big issue. Some security options are available today, but gaps remain. Before wireless e-commerce or even wireless access to the corporate network takes off, organizations are going to have to secure their wireless connections. ▶ 52

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BRIEFS

Opera Introduces Free Version of Browser

The Opera 5.0 Web browser for Windows, the best-known competitor to Netscape Communications Corp.'s Communicator and Microsoft Corp.'s Internet Explorer browsers, is now available for free download from Oslo, Norway-based Opera Software AS at www.opera.com. Opera was previously available only to customers who paid $39 to download it, but this version is sponsor-supported and includes a single banner ad as a trade-off for being available free of charge.

Microsoft Puts Whistler Into Beta

Microsoft last month announced delivery of the first beta release of an embedded version of its Windows operating system, code-named Whistler Embedded. The company said the design goals for Whistler Embedded were to deliver extensive componentization to provide more flexibility to appliance and device makers.

E-Smith Adds VPN, Secure Mail to Server

Boston-based small-business network software vendor e-Smith Inc. has added virtual private network (VPN) support and secure Web mail features to its Linux-based e-Smith Server and Gateway 4.1 software. The new version, which can be installed on any Pentium-class PC, supports Point-to-Point Protocol over Ethernet used by some residential Digital Subscriber Line services. It retails for an annual $365 license.

G-Log Updates GC3

Global Logistics Technology Inc. (G-Log) in Shelton, Conn., has released Version 2.5 of its Global Command and Control Center (GC3) Web-based Global Enterprise Transportation system. The new release extends the capabilities of the GC3 application to incorporate freight settlement, including freight payment, customer billing, accounts payable and accounts receivable, the company said.

Bose Tunes Network With QOS System

Quality-of-service technology helps audio equipment maker prioritize network traffic

BY JAMES COPE

When he began implementing an enterprise resource planning (ERP) system at Bose Corp. last year, Bob Ramrath knew he was putting an additional burden on his company's network, one that could compromise the new shipping system he planned to install a few months later.

Ramrath, who is director of corporate information systems at the Framingham, Mass.-based audio equipment manufacturer, was pulling together new functionality for a network slowdown.

So, before turning on the new shipping system, Ramrath implemented a quality-of-service (QOS) system, which uses technology that means latency and the resulting business slowdowns by prioritizing network traffic by its source or application.

Ramrath spent $8,000 to install QOS appliances from Sitara Networks Inc. of Cambridge, Mass.-based Sitara Networks Inc. at each of two remote distribution centers. He used QOS software to ensure that the ERP software and existing applications—such as e-mail and Web browsing—could coexist on the same network, while allowing the new shipping system to push orders, labels, picking, packing and dispatching instructions to the distribution centers.

"We stream transactions on a package-by-package basis over a [wide-area network] to distribution centers in Tullahoma, Ariz., and Columbus, Ga.,"

BOSE used a QOS system to ensure that a new ERP system didn't slow down network traffic between headquarters (shown) and distribution centers.

Ramrath said. "If the WAN slows, shipping slows. If the WAN goes down, shipping stops cold and instantly."

Ramrath's concerns were exacerbated by the network's thin client architecture.

Smart, fast servers holding the applications and data at Bose's Framingham headquarters are connected over a WAN to relatively dumb display terminals at the distribution centers, an arrangement almost certain to introduce latency.

The Sitara appliances are special-purpose computers that run on a Unix operating system, Ramrath said. They can be set from a central console in Framingham to indicate what types of traffic on the Bose network have priority at any given time.

Sitara's QOS units also have built-in caches — a setup that keeps frequently used data stored on hard drives at the distribution centers and lightens the load on the network, said Ramrath.

Stan Schatt, an analyst at Giga Information Group Inc. in Cambridge, Mass., said Sitara's product works well in situations where it "can identify the type of network traffic by source, such as an Internet protocol address.

However, Sitara's technology has a ways to go to compete with products from Packeteer Inc. in Cupertino, Calif., and NetReality Inc. in Santa Clara, Calif., which can more readily classify network traffic without knowing its point of origin, Schatt said. ▶

IBM, Seismic Data Provider Building Petabyte-Plus SAN

BY LUCAS MEARIAN

As companies involved in oil exploration activities, IT managers such as Jaikie Fenter sometimes have to wait weeks for the arrival of historical geologic or seismographic data that can help pinpoint prospective drilling sites. As a result, the information is often outdated.

"It's one of the major problems with oil companies now," said Fenter, information systems manager at Houston-based Aqir Petroleum Co., which focuses on drilling in the Gulf of Mexico.

"What we do now is just request a map from the vendor and select what [information] we want to buy based on that," Fenter said. Eventually, he said, the data provider delivers a tape that has to be loaded into Aqir's systems before the company can start analyzing the information and get on with the drilling.

Easier Access Via the Web

But Fenter said he's hopeful things could improve if IBM and Houston-based Seitel Inc., which maintains a seismic database used by more than 300 petroleum companies, follow through on a plan to jointly develop a massive storage-area network (SAN) that will make more than a petabyte of information available to users via the Web.

The SAN is scheduled to be up and running in an initial incarnation in the spring. Once the networked storage system is in place, IBM and Seitel said,

oil companies will be able to access seismographic charts, geographical surveys and photos that will be stored in a connected series of data warehouses.

Seitel CIO Bill Leakey said the SAN should contain 1 petabyte of information by the end of the year, with plans calling for that capacity to eventually be doubled. But that will take time and could include a complete rescanning of the storage network, he added.

"We actually think it's going to take about four years to totally implement the whole solution," Leakey said. "We don't expect to finish this project with the same technology we started with." For now, at least, the SAN will be based on IBM's tape storage devices and its Shark enterprise storage system, with storage management software from IBM's Tivoli Systems Inc. subsidiary.

Jack Scott, an analyst at Evaluator Group Inc. in Englewood, Colo., said the IBM/Seitel project could mark a turning point in SAN scalability standards — provided that the two companies are able to build the kind of network they envision.

High-capacity online storage networks "are going to underpin an awful lot of the e-commerce activities in the future," Scott said. "And this one will add a lot of credence to the [technology] if IBM can pull it off." ▶

The SAN Story

■ **Seitel Solution**, a joint venture between IBM and Seitel, is expected to eventually store as much as 2 petabytes of data on a SAN. A petabyte is 1,024TB. If the entire U.S. Library of Congress were digitized, it would take up 10TB.

■ More than 400 oil companies could access 20 years of oil exploration data over the SAN.

■ The SAN will connect data warehouses that stretch from Houston to Colorado to Calgary, Alberta.

Bose Tunes Network With QOS System

Quality-of-service technology helps audio equipment maker prioritize network traffic

BY JAMES COPE

WHEN he began implementing an enterprise resource planning (ERP) system at Bose Corp. last year, Rob Ramrath knew he was putting an additional burden on his company's network, one that could compromise the new shipping system he planned to install a few months later.

Ramrath, who is director of corporate information systems at the Framingham, Mass.-based audio equipment manufacturer, was unwilling to trade new functionality for a network slowdown.

So, before turning on the new shipping system, Ramrath implemented a quality-of-service (QOS) system, which uses technology that thwarts business slowdowns by prioritizing network traffic by source or application.

Ramrath spent $8,000 to install QOS appliances from Waltham, Mass.-based Sitara Networks Inc. at each of two remote distribution centers. He used QOS software to ensure that the ERP software and existing applications such as e-mail and Web browsing could coexist on the same network, while allowing the new shipping system to push orders, labels, picking, packing and dispatch instructions to the distribution centers.

"We stream transactions on a package-by-package basis over a [wide-area network] to distribution centers in Tolleson, Ariz., and Columbia, S.C.,"

BOSE used a QOS system to ensure that a new ERP system didn't slow down network traffic between headquarters (shown) and distribution centers.

Ramrath said. "If the WAN slows, shipping slows. If the WAN goes down, shipping stops cold and instantly."

Ramrath's concerns were exacerbated by the network's thin-client architecture.

Smart, fast servers holding the applications and data at

Bose's Framingham headquarters are connected over a WAN to relatively dumb display terminals at the distribution centers, an arrangement almost certain to introduce latency.

The Sitara appliances are special-purpose computers that run on a Unix operating system, Ramrath said. They can be set from a central console in Framingham to indicate what types of traffic on the Bose network have priority at any given time.

Sitara's QOS units also have built-in caches — a setup that keeps frequently used data stored on hard drives at the distribution centers and lightens the load on the network, said Ramrath.

Stan Schatt, an analyst at Giga Information Group Inc. in Cambridge, Mass., said Sitara's product works well in situations where it can identify the type of network traffic by source, such as an Internet protocol address.

However, Sitara's technology has a ways to go to compete with products from Packeteer Inc. in Cupertino, Calif., and NetReality Inc. in Santa Clara, Calif., which can more readily classify network traffic without knowing its point of origin, Schatt said. ◗

IBM, Seismic Data Provider Building Petabyte-Plus SAN

BY LUCAS MEARIAN

At companies involved in oil exploration activities, IT managers such as Fabio Feneri sometimes have to wait weeks for the arrival of historical geologic or seismographic data that can help pinpoint prospective drilling sites. As a result, the information is often outdated.

"It's one of the major problems with oil companies now," said Feneri, information systems manager at Houston-based Agip Petroleum Co., which focuses on drilling in the Gulf of Mexico.

"What we do now is just request a map from the vendor and select what [information] we want to buy based on that," Feneri said. Eventually, he said, the data provider delivers a tape that has to be loaded into Agip's systems before the company can start analyzing the information and get on with the drilling.

Easier Access Via the Web

But Feneri said he's hopeful things could improve if IBM and Houston-based Seitel Inc., which maintains a seismic database used by more than 400 petroleum companies, follow through on a plan to jointly develop a massive storage-area network (SAN) that will make more than a petabyte of information available to users via the Web.

The SAN is scheduled to be up and running in an initial incarnation in the spring. Once the networked storage system is in place, IBM and Seitel said, oil companies will be able to access seismographic data, geographical surveys and photos that will be stored in a connected series of data warehouses.

Seitel CIO Bill Leakey said the SAN should contain 1 petabyte of information by the end of the year, with plans calling for that capacity to eventually be doubled. But that will take time and could include a complete revamping of the storage network, he added.

"We actually think it's going to take about four years to totally implement the whole solution," Leakey said. "We don't expect to finish this project with the same technology we started with." For now, at least, the SAN will be based on IBM's tape storage devices and its Shark enterprise storage system, with storage management software from IBM's Tivoli Systems Inc. subsidiary.

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Need a Password?
Just Call the Help Desk

A simple policy change on handling lost passwords solves a complex problem at Jude's company

P ASSWORDS are a constant source of problems in my organization. They're irritating, they're obtrusive, they're constantly being forgotten, and they don't even provide a good level of security. Long-term, I'm trying to replace our Windows passwords with smart-card access, but until that happens, we've got to cope with passwords.

Our current problem is at our help desk. When Joe User forgets his password, all he has to do is call the help desk and they'll reset it for him. You have to offer this service — legitimate users are forever forgetting their passwords, and you have to have a way to let them back into the system.

But what's to stop me from calling the help desk pretending to be Joe User and getting someone to reset his password and tell it to me? Not a lot — as long as I can convince them that I'm Joe User, they'll tell me his password. They have to.

Despite all the fuss you hear about choosing strong passwords, in my experience, few attacks depend on exploiting passwords that are easy to figure out. Many attackers just call their target's help desk and get them to do the dirty work. That's called "social engineering;" it's a common attack strategy.

Authentication Challenge

To get around this problem, we need to get the help desk to make sure it only gives out passwords to the right people. In other words, we need to authenticate password reset requests. Well, we already have a simple way of authenticating users. We give them passwords — which they forget. Our help desk is much more professional about this than most, but it's still a difficult problem.

I've been looking for an easy, practical solution to this problem for a while, but when I asked a large group of technologists in our office for suggestions, I

got all the predictable responses.

We could identify them by their Social Security number, by the numbers are publicly available. We could make them go to the help desk with an identification card, but some users work hundreds of miles away from the help desk.

Get their managers to send e-mail? The managers won't stand for the added hassle, and it's not that easy to keep track of who works for whom.

The heart of the problem is that there are only three ways to authenticate a person: by something you know (such as a password), by something you have (such as an ID card) or by something you are (such as your facial features). So once your initial shared secret (that is, the password) is forgotten, you have to rely on either another shared secret — a backup password — or on one of the other two authentication mechanisms; something you have or something you are.

If a user forgets one shared secret he uses every day, he isn't likely to remember a backup password. The only ways around that that I know of are writing it down or making it easy to figure out. Writing passwords is a very bad idea: If you can read it, so can someone else. And if it's easy to figure out (like your Social Security number or mother's maiden name), then it's easy for someone else to figure out.

So that reduces it to something you have or something you are. But unless you're at a very small company, these tend to be expensive solutions that are difficult to manage.

This time, however, someone came up with a simple, practical, cheap solution: Get the help desk to leave the new password on the user's voice mail.

Access to our voice mail is protected by a personal identification number (PIN), an access to a user's voice mail should, in theory, be restricted to that

user. Of course, a user can easily forget his PIN, but the chances of him forgetting both his PIN and his password at the same time are relatively low. And the slight hassle of having to access voice mail might make users think a little harder about their password before calling the help desk.

Basically, it's authentication based on another shared secret, but it's one that users should be able to remember if they use it often enough. This solution isn't 100% secure, but it's better than what many companies have (nothing), and it should be easy to implement.

Security Scanner Goes Live

We ran our first live security scan using Internet Security Systems Inc.'s (ISS) Internet Scanner this week, and everything went like a dream. For months now, we've been going through the process of getting the hardware, configuring policies, running test scans and convincing our engineering team to let us at their prized live networks. The team finally accepted that the scanner wasn't going to bring the live networks crashing down around its ears and gave us the access we needed.

Internet Scanner is a simple tool that scans IP addresses looking for servers, then identifies any viable security vulnerabilities on those servers. It's ISS's simplest and oldest product, and it's also its best.

The scan took a total of 20 minutes to try every nonintrusive test it knew of on eight machines. Running the scan was just a matter of plugging our laptop into the target network, giving it a new IP address and pressing the start button on the scanner. That's the sort of ease of use that I approve of.

The application gave me a neatly formatted report — available either on-screen, in HTML or in Microsoft Word format — detailing every vulnerability it found, the potential consequences of each vulnerability and how to fix them. Of the eight machines on the network, two refused to let the scanner find out anything about them at all — not one vulnerability was found. The two routers turned out to have just one vulnerability, which is a very good result.

We also had three Windows NT machines with a few technical vulnerabilities that we already partly knew about, but the real find was the eighth ma-

chine, a Sun Solaris box that was riddled with security vulnerabilities. In fact, the scanner showed two technical vulnerabilities in the box's X Window System — and the owner of the box didn't even realize the X Window System was installed.

The cooperative system owner and system administrator had the box fixed within hours — definitely a good result.

Now we need to start ramping up our scanning efforts and covering more of our network segments. I hope they'll all fix this easy.

Security Manager's Journal

An E-Mail Shredder

This could be a hot ticket in our litigious society: e-mail that 'expires' and can't be read or retrieved by anyone after a set date. By Barry D. Bayer

Most computer users with some experience treat e-mail with the informality of an untaped phone call.

As Bill Gates and a host of lesser-known e-mail users have discovered, this can be a big mistake. Increasingly, old e-mail, even internal e-mail, is likely to be used as evidence in a court case. Sometimes, what was written in an informal e-mail in the heat of the moment doesn't always look so good when your company is under a litigator's microscope.

Obviously, you can delete e-mail, but deleted computer files have a nasty way of resurfacing. A lawyer looking for provocative e-mail will send in a forensic team to make image copies of your company's local and network hard drives and backup tapes and then scan them for the proverbial "smoking gun." What you may need is disappearing e-mail from the San Francisco firm that calls itself Disappearing Inc.

Vanishing View

Disappearing e-mail has two parts: a 300KB add-on to Microsoft Outlook 98 or 2000 on each user's desktop, and a Disappearing Inc. key server that is accessible via the Web. (A version for Lotus Notes is due this quarter, but Notes users can read disappearing e-mail messages that they receive.) Once the software is installed on Outlook, the user will see a new tab on Outlook's Options menu and a "Send Disappearing E-Mail" button when drafting a new message.

When the message is ready to go, click the Send Disappearing E-Mail button instead of the usual Send button, and the message is sent like any Outlook message.

When a recipient gets the message, it looks just like regular e-mail except for a notation that the message will disappear after a given period. If anyone attempts to read or reread the message after the expiration date and time, the message says it has expired. If a forensics expert tries to resurrect the message from a backup tape or fragments of a hard disk, he may find that a message was sent from one person to another, but he won't be able to read it.

If the recipient doesn't use Outlook, the message arrives as a hyperlink attachment with a note about expiration. Click on the hyperlink before the expiration time, and the message opens in your browser; after that, you'll see a message that says your e-mail has expired.

Disappearing e-mail can be installed for a minimum of $10,000 per year for 100 users.

A Web-based policy module gives your system administrator several options, including the ability to determine who is required to use the system — all users or just specific people — and set a maximum period for which a message will be available.

This module also lets users freeze the keys for all messages or a selected group of messages. This defeats the disappearing e-mail mechanism. However, it is useful if your company is hit with a subpoena, in litigation becomes a possibility, and your lawyers decide that e-mail is evidence and must not be destroyed.

The desktop version of disappearing e-mail, which doesn't offer policy options, is available for free download at www.disappearing.com.

Encrypt your e-mail with traditional means, and a court might order you to provide your opponent with a key that lets him read those messages. But no key exists for disappearing e-mail once it has disappeared (see illustration, below). Neither sender nor recipient ever knows what the key is, and neither has any control over it. And not even the service vendor can provide or reconstruct a key.

Potential Holes

There are a few potential security holes: Recipients can print e-mails before they expire or copy and paste the text of unexpired messages into nonexpiring files. And attachments are never encrypted and never disappear. A version that permits encryption of attachments and prohibits printing and copying and pasting is due in the next few months; it may include an "Oops" button that lets senders make messages disappear before they're read.

A routine e-mail destruction policy makes sense for many organizations. Disappearing e-mail enables you to implement such a policy effectively and to know that when it's gone, it's really gone.

Bayer is an attorney in the Chicago area. He can be reached at Bayer@lawyer.com.

Smoke, Mirrors and Blowfish

When a sender clicks the Send Disappearing E-Mail button, the program contacts Disappearing Inc.'s Web site, obtains a randomly generated 128-bit key, encrypts the message using the Blowfish algorithm and places it into Outlook's Send queue for transmission. When someone attempts to read the message, the reading software requests a decryption key from Disappearing Inc.'s server using the HTTP Internet protocol. When the key is received, the message is decrypted and the key is deleted. When the message expires, the vendor's server deletes the key and "scrubs" the disk location where the key was stored, making it very difficult and expensive - but perhaps not impossible - for anyone to ever read that message.

Now you see it . . .   . . . and now you don't.

TECHNOLOGY FUTURE WATCH
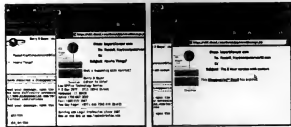
T HE FUTURE of energy production may have had its beginnings in 1802, when Sir Humphry Davy passed an electric current through water, causing it to decompose into hydrogen and oxygen. He postulated that electric attraction held the two elements together.

By 1839, a Welsh judge, Sir William R. Grove, had invented the first hydrogen fuel cell — a development that languished for the next 100 years. In experiments leading up to his invention, Grove showed that hydrogen and oxygen could be combined to produce water and an electric current. He wrote that the current "could be felt by five persons joining hands, and which when taken by a single person was painful."

Hydrogen, which is highly reactive, is usually found combined with other elements. Hydrogen extraction and management have been relatively expensive processes, and until now, no market has emerged to drive the development of the technology. But an unlikely combination of highly mobile computing and mass transportation may finally be creating that market.

Users of wearable computers need power — a source of portable, lightweight power that will last long enough to be useful. They need to drive their CPUs, their monitors and other peripherals, and all of that sucks the juice out of a rechargeable battery within a couple of hours.

Beyond the Mainstream

These unusual niche markets may be heading toward a future powered by hydrogen fuel cells more quickly than the mainstream is.

Xybernaut Corp., one of the main makers of wearable computers, has introduced hydrogen fuel cells manufactured by DCH Technology Inc. in Valencia, Calif., to power its Mobile Assistant IV.

"Fuel cells can potentially

Back to Basics

Hydrogen, the simplest element in the universe, may be the high-powered energy source of the future. By Jan Matlis

How They Work, Made Simple

A fuel cell is similar to a battery and runs a controlled chemical reaction, sometimes called a cold fire. It has a positive terminal and a negative terminal, at which intermediate chemical reactions occur. The full chemical reaction is completed when an intermediate product diffuses from one side of a cell to the other and an electric current flows through an external wire connected between the terminals.

1. Hydrogen flows past the anode, or negative terminal. A chemical reaction there extracts electrons from the hydrogen and leaves positive hydrogen ions, or cations.

2. On the other side of the fuel cell, oxygen flows past the cathode, or positive terminal, where a reaction causes the oxygen molecules become negatively charged oxygen ions.

3. As a result of this process, electrons are drawn from the negative anode (where they were extracted from hydrogen) to supply the reaction with oxygen at the positive cathode.

4. There are now positive hydrogen ions on one side of the fuel cell and negative oxygen ions on the other side. The two sides are separated by a membrane that only allows hydrogen ions, or protons, to cross. Because they're positive, they're drawn to the negative side, where they combine with oxygen to produce water.

This is the same type of reaction as the one that occurred with a great deal of force when the hydrogen of the Hindenburg zeppelin met the oxygen of the atmosphere. But it's controlled so that very little heat is produced and the energy given off can be channeled through a wire to drive electric machines.
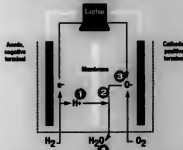
prove (to be) an unlimited supply of portable power and may be the perfect solution to the currently limited life for batteries used for portable electronics," says Edward G. Newman, president and CEO of Fairfax, Va.-based Xybernaut. The company anticipates that a hydrogen fuel cell could keep a Mobile Assistant IV running for 12 to 24 hours, he says.

This particular fuel cell was developed in cooperation with the Electronic and Electron Devices Group at Los Alamos National Laboratory in New Mexico. Its design is cylindrical, about the size of a standard 9-volt battery, including the hydrogen supply. The hydrogen canister is at the center of the cylinder and provides the gas to stacked, disc-like fuel cells.

Oxygen, which is the other fuel required for the cell, comes from the ambient atmosphere outside the cylinder; this design also facilitates the small amount of cooling that's required. The output of the cell is a little bit of heat, water (which evaporates as it's produced) and an electric current.

Fuel cells are similar to batteries, except they require an external source of fuel, rather than an internal store of chemical energy. At an efficiency of about 40%, they're much more efficient than internal combustion engines, which operate at about 13% to 25% efficiency. (About 75% to 87% of the gas burned in an internal combustion engine is a car is not available for making the car move.)

In addition to the problem of extracting hydrogen, there are two other roadblocks to hydrogen becoming a common energy source.

One is distribution. Hydrogen canisters aren't on the rack next to the lithium batteries at the local pharmacy.

Conrad Electronic AG, a German electronics retailer, sells a hydrogen fuel cell for notebook computers that's produced by another German firm, the Fraunhofer Institute for Solar Energy Systems. Empty hydrogen fuel reservoirs, which are removable parts of the cell's flat design, may be exchanged at Conrad Electronic outlets for full reservoirs.

The combination of the fuel cell and reservoir offers longer life than the best lithium batteries. Also, there are no polluting,

dead batteries to be disposed of.

The hope of hydrogen fuel cell developers is that as hydrogen energy becomes a larger part of the general economy, obtaining full hydrogen reservoirs will be as easy as purchasing conventional batteries.

The Hindenburg Dilemma

The second problem hydrogen fuel cells must overcome can be summed up in two words: the Hindenburg. When the zeppelin exploded in 1937 while docking at Lakehurst, N.J., killing 36, the public perception of hydrogen technologies was seriously damaged.

Not many mobile- or wearable-computer users would like to think of themselves as walking Hindenburgs. Hydrogen is very explosive at a concentration as low as 4% and can be ignited by a mere static spark.

On the other hand, hydrogen is 14 times lighter than air and dissipates very quickly. Even with the Hindenburg disaster, it's thought that the 7 million cubic feet of hydrogen in the zeppelin burned off in less than one minute and caused no fatalities. Diesel fuel, also carried by the airship, was responsible for the deaths and continued fires after the original explosion.

Retired NASA scientist Addison Bain has suggested that a mixture of materials in the Hindenburg's cover produced a compound that first caught fire from electrostatic discharges in the atmosphere. As long as the hydrogen reservoirs are designed safely, the gas is safe as a fuel, says Bain.

And NASA evidently feels that the technology is safe. All of the Gemini, Apollo and space shuttle missions have used hydrogen fuels to generate electricity and produce water.

Ironically, it may be the bastions of internal combustion technology and vehicle manufacturers that drive the development of hydrogen energy technology that will benefit portable electronics. In an effort to develop more efficient and cleaner-running automobiles, manufacturers have begun to turn to hydrogen. Most of the major automakers have hydrogen research groups. In the future, hydrogen technology could give new meaning to the phrase "gas station." ❖

Matlis is a freelance writer in Newton, Mass.

Crossing the Wireless Security Gap

Here's what's available for securing wireless connections today — and what's coming. By Alan Radding

ORGANIZATIONS have high hopes for wireless commerce. Bob Egan, an analyst at Stamford, Conn.-based Gartner Group Inc., calls wireless "the growth hormone for e-commerce." But before wireless e-commerce or even wireless access to the corporate network takes off, organizations are going to have to nail down wireless security.

It's not that wireless isn't secure as it stands now. "We are doing secure wireless transactions today," declares Philip Wood, director of international wireless at Charles Schwab & Co. in San Francisco. Rather, wireless security is difficult to implement, requiring organizations to piece together myriad technologies. Few vendors offer a complete security package, and large pieces of the security puzzle are beyond the control of corporate IT, resting instead with carriers and wireless device manufacturers.

Most organizations would prefer to support only a single security model for e-commerce, preferably the Internet model in use today, notes Jeff Reed, vice president of e-commerce consulting firm Logical, a division of London-based Datatec Ltd. E-commerce in the wired world today relies primarily on Secure Sockets Layer (SSL), which is used to transmit everything from personal identification numbers (PIN) and passwords to credit card numbers.

But when you try to move this approach to the wireless world, you immediately encounter problems, starting with cellular phones with Wireless Application Protocol (WAP) capabilities. Unlike desktop and laptop computers or even personal digital assistants (PDA), WAP phones are pretty limited when it comes to security and lack the CPU power and memory necessary for RSA encryption, a key element of SSL.

Encryption ensures confidentiality by preventing eavesdropping, and WAP devices include their own security protocol, Wireless Transport Layer Security (WTLS). This is equivalent to SSL but uses less-resource-intensive encryption algorithms, such as elliptic-curve cryptography (ECC).

There's nothing wrong with WTLS except that "it is not compatible with SSL," which is the industry standard, notes Jeffrey Robinson, manager of corporate development at RSA Security Inc. in Bedford, Mass. So WTLS messages must be converted into SSL before an e-commerce site or corporate network can read them.

Conversion presents a security problem. Wireless messages travel through the air to the carrier's transmitter, where they are received and passed to a gateway that funnels them into the conventional wired network for transmission to the destination. At the gateway, the WTLS message is converted into SSL. For a brief moment, the message sits unencrypted inside the gateway, creating a security vulnerability.

To some observers, this gap in encryption presents an intolerable threat. "We're not losing any sleep over it," says Wood. The messages spend only a few milliseconds in the clear on a machine buried deep inside the carrier's facility. "Somebody would have to break into a carrier site and do a data dump at that precise moment," he explains.

Egg PLC is a wireless Web-based bank in London. To guard the gateway conversion from WTLS to SSL, it runs its own gateway internally. Each message still spends a moment in the clear, but it happens within the Egg facility. "The best solution would be SSL end to end," says Iain Hunneybell, Egg's Internet customer authentication manager.

Redwood City, Calif.-based Phone.com Inc.'s Secure Enterprise Proxy achieves end-to-end security using SSL and WTLS, but it lets organizations avoid re-encryption at the carrier's gateway by creating a WTLS tunnel that lets secure data pass through a network operator's gateway without decryption. WTLS tunneling ensures that the data remains encrypted until it reaches its final destination.

"The Phone.com approach lets you

TECHNOLOGY

CHARLES SCHWAB'S Philip Wood says his firm is conducting secure wireless transactions and isn't "losing any sleep" over encryption issues.

get all the way to your application server," explains John Pescatore, research director for Internet security at Gartner Group.

No Denying PKI

Encryption addresses part of the wireless security challenge. But it doesn't provide the solid authentication required for nonrepudiation, which is a mechanism that validates the information sender's identity to the receiver so that the receiver can be sure the user is who he says he is.

For authentication and nonrepudiation, PKI, where certificates and keys are bound to the user, is the way to go. Everything is initiated through those keys," explains Paul Mansz, vice president of architecture at Toronto-based 724 Solutions Inc., a provider of wireless e-commerce applications. Several public-key infrastructure (PKI) products for wireless are starting to emerge, such as San Diego-based Certicom Corp.'s MobileTrust.

With PKI, organizations issue digital certificates to users to validate users' identity. The certificate is encrypted and accompanies each transaction. By using the public and private key and a certificate authority to validate the certificate, authorized parties can decrypt the certificate to authenticate the user with greater assurance than can be achieved through PIN-based authentication.

With this approach, however, a third party is needed to validate the digital certificate. Vendors that have introduced digital certificates include Certicom, RSA Security, Entrust Technologies Inc. in Plano, Texas; Baltimore Technologies PLC in London; and VeriSign Inc. in Mountain View, Calif.

San Carlos, Calif.-based ePocrates Inc., a provider of handheld computing devices for physicians, opted for Certicom's wireless certificate security for its Palm-based applications.

The combination of Certicom certificate-based security and the more capable Palm device allows ePocrates to avoid the wireless gateway handoff.

"We have true nonrepudiation end to end, all the way to the application-level security," says Daniel Zucker, chief technology officer at ePocrates. With that level of security, ePocrates runs a drug prescription application that relies on Certicom's mobile client certificates to authenticate the identity of the prescribing physician and lets the physician digitally sign the prescription right to the Palm device. The Certicom certificate uses ECC encryption algorithms, which are smaller than RSA encryption algorithms.

Schwab is taking another approach. It opted for a smart-card system from Stockholm-based cellular phone vendor Ericsson Inc. and Gemplus SA in Gemenos, France, which provides the smart card, says Wood. In the system, currently being deployed in Hong

Kong, the wireless device reads the smart card, which carries the Schwab customer's private key and digital certificate. The customer then enters his account number and PIN.

The smart-card system allows for nonrepudiation, but it's available only where there are Global System for Mobile Communications (GSM) wireless networks. In the U.S., there are few GSM networks, thus forcing Schwab to use two different wireless security strategies — one for the U.S. and one for Asia and Europe.

When it comes to authentication, wireless adds a disturbing wrinkle. A wireless phone can be easily stolen or lost. If the owner's digital certificate and key are in the phone, as a smart card or otherwise embedded, it presents an opportunity for considerable mischief. By combining smart cards with the requirement to separately enter a PIN, organizations can thwart such threats. But entering data such as account names and PINs on a cell phone "isn't easy to do. We need simpler approaches," says Pescatore.

On the Horizon

One emerging security tool is biometric devices, which use unique physical identifiers such as voiceprints, fingerprints or retina images to positively identify the user. With biometrics, even if someone should steal your mobile phone, he wouldn't be able to imitate your voice or fingerprint. "By 2004, we expect biometrics will have reached the price/performance level to allow it to be integrated into PDAs and cell phones," Pescatore says.

Woburn, Mass.-based Keyware Inc. offers a system that lets users register their voiceprints for authentication purposes. The voiceprints can be stored on a central server or on a smart card while the wireless device. At least one U.S. bank is testing Keyware's wireless voice recognition system in conjunction with a smart card, says Mik Emmerechts, Keyware's director of U.S. operations, but he declines to identify the bank.

Many of the obstacles confronting wireless security will disappear with the widespread adoption of third-generation wireless technology. The third-generation phones will be IP-based and sport more processing power, memory and bandwidth, which will allow SSL security end in end, explains Matthew Decker, a consultant at Lucent Technologies Inc. in Murray Hill, N.J.

By combining third-generation wireless with smart cards and biometrics, organizations will finally have a unified security system that works for both the wireless and wired worlds. ▶

Radding is a freelance writer in Newton, Mass.

Type Fonts

DEFINITION

Type font is the generic term applied to a set of printable or displayable text characters in a specified typeface family or design (such as Times New Roman), a given style (such as bold or italic) and a single size (such as 10 points).

BY RUSSELL KAY

UNTIL 1984, the term *font* had meaning only to graphic designers, and those for whom printing meant big presses, not desktop peripherals. Those of us who used computers back then were used to seeing rather crude, monospaced letters and numbers on our computer screens and producing printer output that, at best, looked like it came from a typewriter (remember typewriters?).

But that year, two events changed the world of fonts forever. First, Apple Computer Inc. introduced the Macintosh, then Hewlett-Packard Co. debuted the original LaserJet printer.

The Macintosh introduced the computing world to the concept of multiple fonts that actually looked like the type in books and magazines. No longer were all characters, whether a capital W or lowercase l, forced to occupy spaces of equal width.

The LaserJet came with two new-to-computers proportionally spaced typestyles, and we've been printing our memos and reports with Times Roman, Helvetica and others ever since.

Together, the Macintosh and the LaserJet opened up to computers the world of typography

and its hundreds of years of tradition. Although virtually all typesetting is now done by computer, it was a very specialized art for centuries, and it developed a rich language to describe the various elements that entered into type. The following are some of the most common terms:

Glossary of Type Terms

Typeface: This refers to the basic design, which is often intended to a family of faces (called styles in some systems) that are variants of the basic design, such as bold and italic.

Font: Technically, the set of characters contained in one member of a typeface family. In practice, however, the term is used indiscriminately to mean the face, a family or one member of a family.

Bitmap fonts: These are designed to appear on-screen in one size only, and they're optimized for viewing at that size. Bitmap fonts aren't used much today, as the more versatile outline fonts have taken over.

Outline fonts: These can be scaled to any size, remaining sharp and clear in very large sizes. The first outline fonts were developed by San Jose-based Adobe Systems Inc. for the PostScript system and were called Type 1 fonts. Later, Apple developed the TrueType format, which was subsequently adopted by Microsoft Corp.

for use on Windows. And introduced with Windows 2000 was a new type of outline font called OpenType, which essentially replaces and subsumes both Type 1 and TrueType.

Character set: A font can have any number of characters in it. Some specialized symbol fonts might contain only a few characters, while others designed for multiple languages can have as many as 1,000 characters. Many Asian languages, based on pictorial glyphs signifying words or concepts rather than letter alphabets, use tens of thousands of characters.

This creates obvious font problems that ASCII was never designed to handle. The most common way out of this dilemma involves allocating two bytes per character instead of one. This allows the computer to keep track of some 65,000 different symbols.

Glyph: This is the actual graphic representation of a single letter or symbol. Thus, the glyphs for the letter A in two fonts will be different, even though they represent the same character.

Kerning: Especially when used in large sizes, the horizontal spacing between individual letters must often be adjusted, or kerned. For example, look at the *Ty* in the headline of this QuickStudy. If normal spacing were used, these two letters would seem unnatural by far apart. By sliding the y underneath the top arm of the T, the visual spacing — how the eye perceives it — is made more even, and this lets the eye move more smoothly among the lines of text.

Point size: Type and fonts are measured in archaic units called points, one point being twice as close to 1/72 of an inch. Text (normal reading) sizes tend to run in the range of 8 to 12 points; the headline above measures 897 points in size.

What those points measure, however, isn't always obvious. It's not the height of the capital letters; it's the distance from the top of the highest part of, say, an *f* to the bottom of the lowest part of, say, a *g*. (see the diagram below).

Type design: Explaining the design and all the elements of a typeface is beyond the scope of this page, but if you're interested in learning more, I suggest Robert Bringhurst's *The Elements of Typographic Style*

(Hartley & Marks, 1997).

There are many classification schemes for letter design, but the major ones you need to know are serif (letters with little "feet" on them, like the ones you're reading now) and sans serif (more geometric and usually plainer, like the paragraph headings in this glossary). Many other classes exist for decorative or historical reasons.

Unicode: Computers once dealt with just 128 characters for letters, numbers and symbols — the ASCII set. It took a lot of software conventions to use a language with multiple accents and diacritical marks (as in languages such as Polish or Romanian) or even a totally different alphabet (such as the Russian language's Cyrillic alphabet). Character sets were expanded to 256 and beyond, but this didn't solve the problem very well.

Unicode is a new standard for fonts, a kind of "super-ASCII" framework that allows 65,000 characters in a single font, with mechanisms for easily changing from one subset to another. It's been around for a few years, but little has been done with it. ⯈

Font Anatomy 101

Printed letters are measured in units called points.
Other important features of letter design are shown here.

Hfgx

ascender line · mean line · x-height · baseline · point size · descender line

Hello, This Is Your E-Mailbox Calling

*Conita Technologies' voice portal
software delivers e-mail via telephone*

BY AMY HELEN JOHNSON

WHEN RAY Whitlock, an international marketing manager at Pirelli Cables and Systems Ltd., is traveling, he doesn't need a laptop to check his e-mail. He just pulls out his cell phone.

Pirelli has a personal virtual assistant (PVA) system installed at its headquarters in Columbia, S.C., that lets users remotely operate applications such as e-mail through voice commands. Built by voice portal vendor Conita Technologies Inc., also in Columbia, the PVA technology "helps us be as responsive as possible," says Whitlock.

Pirelli's 75 sales and marketing team members don't have the time or laptop ports needed to log on to the corporate server remotely. But if they have their cell phones and a few minutes — say, during a taxi ride — they can receive and send e-mail, receive calendar and scheduling alerts by phone, and speed-dial from their address books.

Taking Advantage of Mobility

Conita CEO Jeffrey McElroy says the company was formed to serve mobile workers who have been left behind by just-in-time information technologies. Those applications work great when you're at a desktop, he says, but the employees who are most pivotal to profit — such as the mobile sales force — can't take advantage of them.

"Those people today are just not at the same level of awareness and knowledge of things that are going on at the company as those who are sitting at the desktop," says McElroy.

Conita's PVAServer sits behind the corporate firewall, integrated into the corporate network infrastructure. A separate module links to a Microsoft Exchange server for voice access to e-mail. (A Lotus Notes module is scheduled for release this quarter.) Another module provides a Web-based user interface for setting up rules such as having messages filtered based on the sender's identity.

The Conversant Dialog Engine, which manages the voice conversation with the user, is the PVA system's key technology. One thing that makes the engine successful, says McElroy, is that it can adjust the dialogues and phrases it uses to match the situation and the past behavior of the user.

Tim Scannell, an industry analyst at Mobile Insights Inc., a consulting firm in Mountain View, Calif., says the ability to customize is what sets Conita's products apart. The firm's PVA system comes with a graphical development environment that lets companies build customized voice applications that can, for example, deliver sales updates over the phone.

Conita has links to North Vancouver, British Columbia-based Pivotal Corp.'s eRelationship package, McElroy says, and is working on integration with back-office systems from Siebel Systems Inc. in San Mateo, Calif., and Inter-act Commerce Corp. in Scottsdale, Ariz.

Talk About Improvements

Scannell says Conita's technology has a few weaknesses, most notably in the area of security. And the company could easily be overshadowed by Microsoft Corp. and IBM, which are investigating voice technology for their e-mail server products, or by a database company like Oracle Corp.

McElroy says Conita is working on increasing the intelligence within the product. For example, he says, the preferred sender filter that lets messages from designated people always ring through could be expanded so that in addition to major circle of contacts who receive instant messages.

The company has greatly improved its PVA system's speech-recognition capabilities, says Whitlock, who has used the product since its first release.

There's no tedious training required — such as having to repeat phrases over and over to get the software used to your speech patterns — and Whitlock says the system has no trouble with his Southern accent.

Still, McElroy says he worries that the voice technology category as a whole will earn a bad reputation if any one vendor has subpar technology that frustrates users.

"Our concern is that voice portals that aren't very good at voice recognition will get a reputation for not working," says McElroy. "We've gone to great pains to mitigate that, but not all the consumer portals do the same." ▪

Johnson is a Computerworld contributing writer in Seattle.

PVASERVER gives mobile workers phone access to their e-mail, says Jeff McElroy (center), seen with Richard Ulmer and Thomas Mithofer.

Conita Technologies Inc.

Location: 1200 Main St., Suite 900, Columbia, S.C. 29201

Telephone: (888) 515-6200

Web: www.conita.com

The technology: Voice portal software

Why it's worth watching: Its server enables access to Microsoft Exchange e-mail, voice mail and custom applications, using a telephone and voice commands.

Company officers:
• Jeffrey McElroy, president, CEO and co-founder
• Richard Ulmer, vice president of engineering and co-founder
• Thomas A. Mithofer, vice president of strategy and planning and co-founder

Milestones:
• 1996: Company founded
• March 2000: First product introduced

Employees: 55; 96% growth per year

Burn money: $9.5 million from SAIC Venture Capital Corp., Coastal Growth Partners LP, General Magic Inc., the company's founders, and angel and private investors

Products/pricing: PVAServer, $3,995 per telecommunications port; PVAExchange, $4,995 per system; PVAStudio, $995 per seat

Customers: Pirelli Cables and Systems; International Computers Ltd., Applicast Inc.; Enabling Technologies Co.; Nelson, Mullins, Riley and Scarborough LLP

Partner: Secunda Technologies Inc.

Red flags for IT:
• The system's security may not be adequate for some applications.
• It works only with Microsoft Exchange e-mail servers.

Dual Personalities

Business technologists – masters of both technology and business strategy – are becoming increasingly common and critical to organizations. To be successful, they have to develop two different kinds of skills. By Mary Brandel

A T HOMELIFE FURNITURE Corp., Ed Smith splits his time between working with the company's CIO and working with the vice president of business strategy.

Half the time, he's documenting business rules for the $700 million Hoffman Estates, Ill.-based furniture company, which was spun off in 1999 from Sears, Roebuck and Co. He spends the other half of his time building computer systems to execute those rules.

His focus is on enterprise application integration and making sure transactions flow smoothly from the cash registers to the SAP system to the forecasting system and out to payroll.

Understanding both sides of the fence — the business as well as the technology — is key for an enterprise architect like Smith. "I'm working closer and closer with the business [side]," he says. In fact, he was recently promoted to director of IT.

"The first thing I think of is technol-

ogy for solving problems, while the first thing the business [side] thinks of is process," he says.

Smith is one of many IT workers who walk this double line. Referred to as "business technologists," they are professionals who either hail from the IT department and have honed their business skills or who started out in business and have developed solid technology skills.

Some, like Jim Barron, vice president of business development for wireless Internet solutions at Polaroid Corp. in Cambridge, Mass., started off in business department and became enamored of technology. Others, like Smith, started off with their heads in CICS and Cobol but became entwined in business strategy.

While business technologists like Smith, Barron and countless others have been around for years, they've become so highly valued by companies that anyone in the workforce would do well to learn from their experiences in developing a unique skill base.

Smith says that for his part, he keeps his business hat on by focusing on three goals per day: knowing the audience, executing something every day (to keep the business folks happy) and learning continuously. The most important area to hone is communication, he says. "Since you're in the trenches, it's easy to identify the business rules," Smith says. "But if you can communicate well and listen well, that's half the battle."

Bridging the Gap

Barron's career has been redefined because of his passion for the Internet. After 26 years in sales and marketing at Polaroid, he became a leading advocate for using the Internet to enhance the firm's business model. About a year ago, when Polaroid's CEO agreed that the company should join the e-business community, Barron was chosen to head the effort.

While Barron primarily considers himself "a business guy," he says he also has a mathematical background and "an intuitive feel for technology." Still, he say, upon starting his new job he felt like he was back in school. "There was a massive amount of self-learning, and the Internet is beautiful for that," he says. He also attended seminars and workshops in e-commerce and channel conflict and "did a lot of hanging out with my IT friends and rolling up my sleeves and working in a very effective cross-functional business-team model."

Barron says he has needed to have a grasp of "some fairly beefy technology," such as when he helped make some multimillion-dollar software decisions. He has also developed a deep respect for IT standards. "Every marketing person has a view of what their Web site should look like, but you can end up with different parts looking as though

they were built by 15 different companies," he says. "I've always heard this from the tech guys, but being on the other side of the argument, I didn't understand it as well."

The technology arm of The Limited Inc. in Columbus, Ohio, believes so strongly that its 700 IT employees should be business-minded that it provides business training and mentoring relationships to get them up to speed.

"You have to make IT part of the business strategy to begin with," says John Ricker, CIO at Limited Technology Services (LTS). "What that requires is a different type of technologist — one that gets kudos for being a good businessperson and . . . a good technologist as well."

Creating or finding employees skilled in both business and technology is a tall order. At the LTS learning center, employees can attend courses teaching everything from retail accounting to Java. While the company is currently rolling out a skills assessment process that will help employees know what training they need, it's up to the individual to make such a determination.

But whether you engage in formal training or in-the-trenches learning, everyone agrees that the business and technology balance is tough to maintain. "I know I have challenges on the business side," Smith says. "It's a hard fence to straddle." ●

Brandel is a freelance writer in Newton, Mass.

The Better Business Technologist

Limited Technology Services CIO John Ricker says the following are characteristics of the ideal technology associate:

● Business and financial acumen, such as an understanding of what an "internal rate of return" calculation is and how to get it, or how to read a profit-and-loss statement

● Understanding the tension between budget, operations, capital, expense and head count

● Sensitivity to all the relationships that influence a project, not just being able to recognize, "Oh, this is a Unix project."

● Both written and oral communication skills

● An understanding of relationship management — up, down and across the organization

● Project planning skills

● Performance monitoring skills

● An understanding of the value of coaching

● A customer-focused approach - understanding what the customer wants and bringing value to the business

— Mary Brandel

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Subscription rates: U.S. $39/year; Canada $110/year; Central and South America. $250/year; all others, $295/year

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NEWS

UCITA

the proposed act — in raw, baseline, quantifiable terms — on site's business," said Barnes.

But Nationwide's estimates were met with questions by UCITA proponents, who said they would like to see the company's study.

"I'm doubtful about the estimate being attributable to anything in UCITA," said Carlyle Ring, who headed the UCITA drafting committee at the National Conference of Commissioners on Uniform State Laws (NCCUSL), which drafts laws for state adoption.

UCITA may face a decisive showdown in 2001, as the Digital Commerce Coalition (DCC), which represents vendors, seeks to create momentum for its adoption by winning approval in a handful of additional states. The DCC hasn't said which states it's targeting, but they could include Texas, Oregon and Washington, according to some familiar with the issue. UCITA has been adopted in Maryland and Virginia.

The year 2001 "is pretty critical — if we can keep the DCC from getting any new states to accept this or pass it, I think that would be a critical blow to them," said Randy Roth, director of corporate purchasing at The Principal Financial Group in Des Moines, Iowa.

Dan Duncan, executive director of the Alexandria, Va.-based DCC, said he disagreed. "If we don't get UCITA passed in four to five states this year, it doesn't put a death knell on UCITA," he said. But the group would need to educate legislators "so that they can be prepared in the following years to pass UCITA," he added.

UCITA, which was sent by the NCCUSL in 1999 to the legislatures of all U.S. states and territories for their consideration, seeks to bring a set of consistent rules to software contracts and licensing agreements and give user companies the freedom to change terms and conditions in contracts. But opponents argue that the act would create a se-

One Estimate

Nationwide estimates UCITA will boost its IT and contracting costs by at least $20M:

SECURITY, 45% OF THE COST: Increased spending is needed to offset risk associated with self-help and other restraints.

QUALITY ASSURANCE, 35%: Liability-limiting provisions are disincentives to vendors to deliver good products.

CONTRACTING, 20%: UCITA's provisions will make negotiations tougher.

ries of adverse default rules, such as self-help, that will be difficult to negotiate away.

The details of UCITA are complex, and opponents said it's not an easy task to raise awareness among end-user companies. The act "could be adopted because people just don't get it," said Bill Zumwalt, CIO at McLane Co., a wholesale distributor in Temple, Texas.

Opponents were unsuccessful in getting UCITA reshaped in Virginia. A study commission, formed after the state adopted the act, rejected many proposed amendments that did approve one significant provision that overturned a requirement for all software contract renegotiations in the event of an acquisition or merger.

In Oregon, UCITA has received conditional endorsement from a study commission that acknowledged that a uniform law is needed to deal with new kinds of transactions, said Peter Bragdon, an assistant general counsel at Columbia Sportswear Co. in Portland and the head of a state subcommittee that looked at UCITA. But Bragdon said the act needs more study. Enough "question marks" have been raised, he said, that "there ought to be concerns in the Legislature."

Still, Bragdon said adoption in 2001 of UCITA by the Oregon Legislature is possible. The state's part-time legislature "is heavily reliant on information from lobbyists and other outside experts," he said. ▶

Supply Chain

the amount of paper transactions needed, helping it optimize its supply-chain operations and improve its manufacturing processes.

But while the financial benefits of supply-chain management (SCM) improvement projects can be hard to quantify, firms are quick to feel the downside "if anything goes wrong, a recent survey indicates. While many observers consider companies like Dell Computer Corp. and Cisco Systems Inc. to have four examples of high-tech supply-chain successes, other firms should be warned against trying to imitate them, experts said.

It's difficult to document SCM return on investment of any sort, said Vinod Singhal, associate professor of operations management at the Georgia Institute of Technology in Atlanta, who recently completed a study of 861 companies, including some that suffered highly publicized supply-chain glitches between 1989 and 1998. "Much of the evidence [for payoff] is anecdotal," Singhal said.

Only a few lucky companies can prove that they have achieved any real payoffs from their SCM efforts, said Robert

Wireless Net Saves Time, Dollars for P.R.

Fixed wireless conquers terrain

BY JAMES COPE

By the end of 2001, the government of Puerto Rico plans to complete a fixed wireless infrastructure that will link disparate government and public entities throughout the island territory. Of the 78 fixed wireless sites planned, 49 were up and running last month.

Jorge Aponte, director of the Puerto Rico's office of management and budget, said his initial idea was to purchase network services from a telecommunications carrier. But that was going to cost $90 million to $100 million in annual fees.

In the end, the island elected to build a hybrid network using fixed wireless equipment from Western Multiplex Corp. in Sunnyvale, Calif., and an existing fiber-optic backbone. The capital expenditure will be about $50 million, Aponte said, and the annual operation cost won't exceed $15 million.

Aponte said using fixed wireless between network access points and the backbone effectively bypassed the problems of trenching and pulling fiber throughout the rough island terrain. And because the

system runs over different frequencies, no approval process slowed deployment.

Installation of the fixed wireless sites began in April, and the project linking up to 3,000 facilities should be done by the end of 2001, said Aponte.

Brownlee Thomas, an analyst at Giga Information Group Inc., said it made sense for Puerto Rico to create its own network, given the service fees it would have had to pay a service provider. She compared the project to when some universities have been doing, connecting campuses and buildings using combinations of unused fiber and wireless. ▶

Austin, an assistant professor at Harvard Business School. With so much money and time at stake, these implementations create a return-on-investment crisis, he added. "Rarely have general managers been asked to make such important high-stakes choices with so little analytical backup," he said.

But one thing is certain: Supply-chain projects are costly, time-consuming efforts — and if they go wrong, they can place a company's operations and financial viability in peril. In Singhal's study, supply-chain gaffes resulted in an average stock price plunge of 8.62% — or $120 million in capitalization per company.

In the past year, PetSmart.com Inc. in Pasadena, Calif.; Am Stores Inc. in Hudson,

Ohio, and Hershey Foods Corp. in Hershey, Pa., all faced serious inventory and supply-chain problems that slashed revenues. In each case, the problems occurred while installing SAP AG ERP software.

"All major IT projects are risky because they involve both technological and organizational change," said Ronald Castro, director of SCM at Philippines-based Dole Asia. But these risks can be managed "by having a clear idea of where you want to go with the project, tight project management and a strong commitment to making it work," said Castro.

Dole Asia has been installing software from i2 Technologies Inc. in Dallas in an effort to create a single, coherent supply-chain system that will connect its manufacturing, logistics and sales and marketing units for pineapple harvesting and processing.

In 1997, The Boeing Co. took a $1.6 billion charge because of supply-chain bottlenecks following a surge in demand for its aircraft. Now, after revamping its supply-chain operations over the past two years, Boeing has been able to reduce parts shortages from as many as 1,400 per day to nearly zero and has been working to better align itself with its suppliers, said a spokesperson. ▶

Supply Chain?

An study of 861 firms over 11 years witnesses any supply-chain glitch can hamper a company's stock price.

- On average, the stock value of a company fell 8.62% after a problem is announced.
- Over six months, the stock fell 20%.
- On average, the market cap drops $120M per company.

FRANK HAYES/FRANKLY SPEAKING

The Lowdown for '01

READY FOR 2001? The new year's IT odyssey will be driven by a slowing economy — and that means a bumpy ride, not just for cash-starved dot-coms and revenue-short vendors, but for belt-tightening corporate IT shops, too. The result: Fewer choices and tighter options, just as a new slew of problems charges to the front of the IT agenda.

The good news: **Vendors will be sweating bullets** for the next few quarters. With PC sales down, corporate IT is in a position to bargain hard. Vendors need that revenue — and they need to move units to reduce inventories. Cut deals and buy now — if you can.

Why? Because the bad news is that **IT budgets will hit a wall too** as the economy cools. Keep an eye on your own corporate earnings, and an eye out for executive scuttlebutt — and be prepared to suspend projects you can live without. If the Federal Reserve really can engineer a soft landing, you'll be winding down projects but before next New Year's.

Will **dot-com layoffs** help with the IT skills shortage? Maybe — but don't count on it. Many dot-com refugees will jump back to startups the first chance they get, which makes them expensive short-timers. And if your IT shop is caught in a budget downdraft, you won't have big bonuses or exciting projects to encourage them to stay.

Meanwhile, with hours up 30% in some IT shops and the looming threat of budget cuts, get set to **handle unhappy veterans** if you promise the world to dot-com refugees. Your best current people may not leave while things are tight — but if you snub them now, they'll remember it when times get better.

When you're finished sweating over budgets and personnel, expect to spend **more time with your legal department**. Customer privacy is a hot issue now, but right behind it are consumer protection, unfair competition and even liability issues if your employees spread viruses or a hacker diverts traffic from your site.

Remember, if a data-related lawsuit hits your company — or even a competitor — your legal people will want to know everything about the data you collect, how it's used and how it's protected from both crackers and improper use by your own people.

Crypto for everything that moves on your net-works won't be a mandate for 2001, but it's just around the corner. You can sell encryption to management as a way of protecting customers and guarding against industrial espionage. But make sure the crypto system you choose is modular and easy to upgrade. As U.S. export laws ease and industrywide standards arrive, you may need to convert to a new system — and fast.

You already know the big challenges in technology for 2001.

You already know the big challenges in technology for 2001: **wireless handhelds, remote user security** and **B2B integration**. And the big challenge in handling your CEO is still **managing expectations**. Hot airline in-flight magazine topics will include **bulletproof applications, "revolutionary" software written by computers** and the wonders of **XML**. If your CEO believes everything he reads, you'll have some explaining to do.

But if you adjust no other CEO ideas, be sure you manage expectations about **customer service**. Remember:

■ It's not primarily a technology issue — it's about your company's people working with their customers.

■ It can't be fully automated.

■ All IT can do is provide better channels for communicating.

Repeat those three truths to the boss over and over, early and often. That way, you won't be forced to burn your shrinking budget on whole-sale "customer service automation" projects you know are doomed, and you can focus on projects that will help your business plow through until the economy picks up again. ■

Hayes, Computerworld's senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

The 5th Wave

"I think you're just jealous that I found a community of people on MSN.com that worship the gum as I do, and you haven't."